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PLUMBING HEATING LIGHTING MILL SUPPLIES

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The Ventilation of Schoolhouse Toilets—I

By Charles L. Hubbard

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One of the important matters to be carefully considered in connection with schoolhouse ventilation is the care of toilets and lavatories.

These are often treated without very much thought by connecting with a flue in which the draft is as likely to be downward as upward. There is no use in connecting a vent duct with a flue unless there is something to produce a draft in the right direction. This may be accomplished by heating the air in the flue or mechanically by the use of a fan. The former is simple, and if heat can be utilized which would otherwise be wasted, it is to be preferred on the ground of economy. In the case of small toilets, the heat required to produce proper ventilation is of minor importance, and a loop of steam pipe within the flue, or a small heater, is usually the best method to employ. In the case of the main toilet rooms in large buildings it is better to use a fan, or at least to provide one for use during certain parts of the day when the toilets are in most frequent use, and on days when the atmosphere is damp and heavy and conditions unfavorable for natural ventilation. A combination of fan and natural draft is often advantageous, the former to be used when necessary, as above described. For average conditions we may use the following general rule with such modifications as seem necessary in any particular case. For small toilets of one to three fixtures a loop of steam pipe may be used in the flue; for larger rooms, of four to eight fixtures, with lavatory, a heater at the base of the flue may be used.

In the case of the main toilet rooms of grammar and small high schools, the combination system of heater and fan is advisable, and in large grammar and high schools where the toilets are in pretty constant use it is best to install an efficient system of fan exhaust and operate it continuously throughout the school session. A simple and effective method of connecting the fixtures with the vent flue is shown in Fig. 1. In this arrangement a space twelve to eighteen inches in depth is closed in by means of marble or slate slabs, and the local vents of the fixtures are connected with this as shown. This chamber, in turn, is connected with a vent flue having the necessary draft to properly ventilate the fixtures.

Sometimes the local vents are connected with the flue by galvanized iron pipes, but the arrangement shown is simple and the closed chamber conceals the plumbing pipes. The joints between the

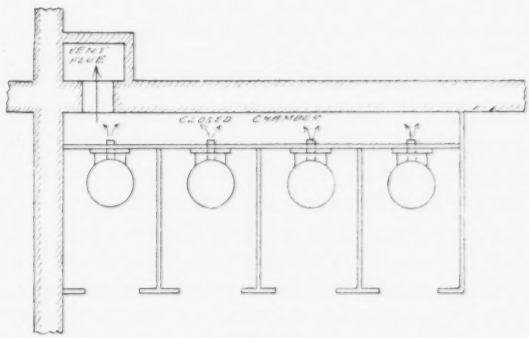


Fig. 1.

slabs of which the space is made need not be airtight, as there should be a certain amount of general or room ventilation which may as well be in part through leakage between the slabs as through a specially provided register. It is best to keep the toilet rooms under a slight vacuum instead of a pressure, as this prevents any escape of odors into other parts of the building. This condition may be secured by providing discharge ventilation only and taking the air supply from adjacent corridors through louvres or grilles in the lower panels of the doors.

It is customary to provide for changing the entire air of the room once in ten minutes. The fixtures are usually given a 4-inch vent which has an area of 12 square inches. A velocity of 200 to 250 feet per minute through these is sufficient, and a lock register making direct connection between the room and the vent duct or flue should be provided to care for the remainder of the ventilation. This may be figured on a basis of 300 feet velocity

per minute over its gross area. When in operation this register should be throttled, if necessary, to give the proper velocity through the local vents. When possible, waste heat should be utilized for heating the vent flues. In schoolhouse work the only waste heat is that radiated from the smoke pipe, and this may be used for ventilating purposes by means of the arrangement shown in Fig. 2. The

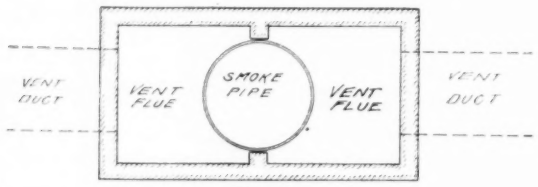


Fig. 2.

pipe or stack is made of iron and is carried up inside a brick vent flue. In Fig. 1 it is used to heat two separate flues; if only one flue is required the pipe would be carried up in the center with a space entirely around it. An arrangement of this kind makes a hot flue and hence produces a strong draft. As the heat used would otherwise be wasted to a large extent, it is economical to run and is always to be preferred to a steam heated flue.

Fig. 3 shows a steam loop for use in a small flue. For one to three fixtures a loop of 1-inch or 1¼-inch pipe about 12 feet high is sufficient. The

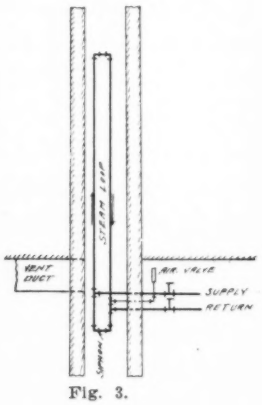


Fig. 3.

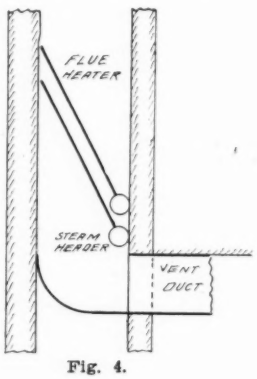


Fig. 4.

method of making the steam and return connections and of air venting are clearly indicated. A loop or water seal at the bottom prevents the steam from entering the return. The air valve in this case, as well as on all flue heaters, should be brought outside of the flue to some accessible point where it may be easily reached for inspection and adjustment.

Fig. 4 shows the side view and Fig. 5 the front view of a flue heater where more heating surface is required. This is made up of Nason tubes screwed into cast iron headers and supported in an inclined position as shown in Fig. 4. In making up a heater of this kind the length of the tubes should be at least twice the depth of the flue, in order not to reduce the free area through the heater below that of the flue itself. This proportion is based on the assumption that the free area between the pipes is equal to one-half the "over-all" area of the heater. Each header has a single steam connection which acts as both a supply and return. If the connection is made in the end of the header, as shown, an eccentric bushing should be used so as to bring the opening near the bottom of the header in order to drain it properly. A better arrangement is to use a back-outlet header, with the opening near one end. This gives good drainage and allows the heater to fit the flue more closely at the sides. The air valve should be connected into the opposite end of the header from the steam pipe, and should be brought to some accessible point instead of being in the flue, as shown, unless they are easily reached through a door in the vent duct. Heaters of this kind should be placed just above the connection with the duct as indicated.

The amount of heating surface required depends upon the size and height of the flue and the volume of air to be moved. For average conditions we may assume a velocity of 300 feet per minute through the flue with an outside temperature of 60°. The following table gives the approximate velocity in feet per minute which will be produced in flues of different heights for given differences of temperature between the external air and that in the flue.

TABLE I.

Height of flue.	Difference between temperature of air in flue and external air.					
	5°	10°	15°	20°	30°	50°
10′	70	100	130	150	180	240
20′	100	150	180	210	260	340
30′	130	180	230	260	320	410
40′	150	210	260	300	370	480
50′	170	240	290	340	420	540
60′	190	260	320	370	460	590

Example—It is desired to discharge 1,300 cubic feet of air per minute through a flue having an area of 4 square feet and a height of 30 feet. If the efficiency of an aspirating heater is taken as 400 heat units per square foot per hour, how many square feet of surface will be required to move this amount of air when the temperature of the room is 70° and the outside temperature 60°? Solving, we have 1,300÷4=325 feet per minute velocity through the flue.

Looking in Table I and following along the line opposite a 30-foot flue we find that to obtain this velocity there must be a difference of 30° between the air in the flue and the external air. If the outside temperature is 60° then the air in the flue must be raised to 60+30=90°. The air of the room being at 70°, a rise of 20° is necessary, so the problem resolves itself into the following: What amount of heating surface, having an efficiency of 400 heat units, is necessary to raise 1,300 cubic feet of air per minute through 20°?

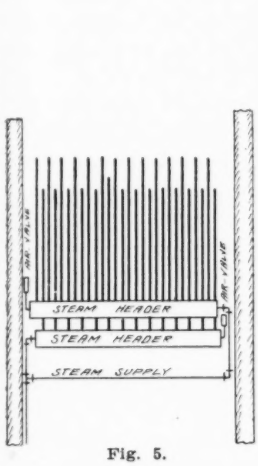


Fig. 5.

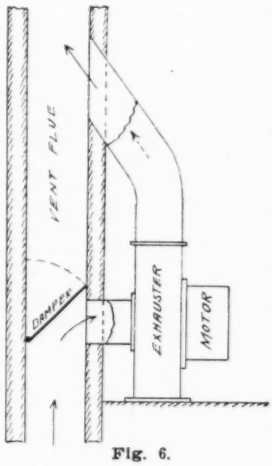


Fig. 6.

1,300 cubic feet=1,300×60=78,000 cubic feet per hour, and to raise this through 20° will require

$$\frac{78{,}000\times 20}{55}=28{,}363$$

heat units, and this divided by 400, the efficiency of the heater, gives 71 square feet of heating surface required.

Fig. 6 shows an arrangement where an exhaust fan is used in connection with a flue heater. In this case the heater is at the bottom of the flue and is not shown in the cut. The exhauster is usually placed on an upper floor, or at any convenient point above the heater. A damper is provided in the flue, as shown, and the exhauster acts as a by-pass around it. Ordinarily the damper will be open and the air will pass upward by gravity, but when a stronger draft is required the damper is closed and the air drawn through the fan as indicated by the arrows.

(To be continued. All rights of republication reserved.)

Portly Passenger: "Why don't you get up and give one of those ladies your seat, Tommy?"

Tommy: "Why don't you get up and let them all sit down?"—The Tatler.

The Influence of Animal Heat in Heating Systems

By Walter B. Snow, of Boston

The human body itself is the most important factor concerned in any system of heating. This is not alone because individual comfort is concerned, but because the body furnishes its quota of heat. The slow process of combustion is kept up by the feeding of oxygen to the lungs, and its union with the carbon. The rejected product, carbonic acid gas, is identical with that resulting from perfect combustion in a steam boiler furnace.

Independently of the temperature of the external air, the internal temperature of the healthy body remains practically constant at a little less than 100°. The actual heating of the body is not, therefore, the ultimate object for which a system of heating is installed. Such a system must necessarily maintain such a temperature about the person that the conduction of heat therefrom will be neither too rapid nor too slow. A few degrees change from the ordinary is readily noted by discomfort.

Overheating, as in any case of combustion, takes place when sufficient provision is not made for the removal of heat, and likewise chilling results when the rate of removal is too rapid. With the air in a room maintained at 70°, one may feel cold or warm according to the actual temperature of the surrounding walls, to which the warmer body radiates heat. In fact, the whole process of heating, as related to the human body, consists in properly regulating the transmission of heat therefrom, whether it be by radiation to surrounding objects, by conduction to the air in contact with the body, or by evaporation of moisture from lungs, throat and skin. The rate is dependent upon surrounding atmospheric conditions; at all times equilibrium must be maintained. When radiation and conduction are not sufficient, evaporation in the form of perspiration undertakes to do its part to make good the deficiencies of the other two methods.

The clothing likewise plays its part. It proves more or less warm to the feelings solely by preventing the cooling influences of the external atmosphere. In such a country as this, warm porous clothing, powerful as a non-conductor, but no barrier to the diffusive action of the skin by exhalation, is of the greatest importance. Hence, the evident value of woolen goods which cannot be too much appreciated, particularly when from the nature of the occupation, the excitement, or other

causes, the circulation is subject to considerable inequalities.

Of course humidity is recognized as a most important influence in connection with heating processes. In this country we are accustomed to have a temperature of 68° to 70°, but the air is dry, usually excessively so. In the south and west of England, on the other hand, the excessive humidity, which reduces the evaporation from the body, renders a temperature of 55° to 60° equally comfortable.

The effect of animal heat is most pronounced in a crowded assembly. Here, as in the case of a theater, with its close uniform seating, with no external walls, and little opportunity for radiation from the body except to those adjacent, there is a noticeable increase above the normal temperature. Under ordinary conditions this increase may be five or six degrees, often it mounts up to ten degrees or over. The problem of heating then becomes reversed. In fact, means must be provided to cool the internal atmosphere. Instead of admitting air at about the normal temperature of 70°, it is necessary to decrease the temperature about as much below the normal as the animal heat tends to increase the temperature above the normal.

Hence, an admission temperature of 60° to 65° best suits the conditions. But the place and method of admission become of vital importance. The entering air must not be apparent; its velocity must be low, its immediate contact with the body must be avoided. To this end under seat distribution, through the chair legs, or in other approved manner, appears to best meet the requirements. By the time it has passed up between the seats and comes in contact with the body, its velocity is unnoticeable, and its temperature has been increased by contact. The air itself is not heated by radiation, for it is a ready transmitter of heat; but from floors, chairs, walls and the bodies of the individual occupants, it wipes off and carries away the heat so radiated. As a consequence the mere structural arrangements may, in a seemingly inert way, have an influence upon the operation of a heating system. In a closely crowded hall they may assist the body in the disposal of its heat, and in turn may render simpler the transmission of that heat to the air in transit. In the sparsely occupied room they may have the same influence, but owing to the lack of animal heat the result may not be beneficial. The transmission and escape of heat then becomes too rapid, and additional heat must be supplied from external sources.

As our knowledge of the details of heating and ventilation become more refined, the factors here discussed must receive more careful and discriminating attention. The many variables which may exercise their influence in any system and the interdependence of the heating and the ventilation combine to complicate the problem. It is only by study of its individual details that it may be comprehended in its entirety.

AT A FRENCH WATERING-PLACE.

Mother: "Tommy, why don't you talk to those other children in their own language?"

Youthful Briton: "What's the good? It only encourages them!"—Punch.

Not Dangerous.

Pat: "I hear yer woife is sick, Moike."

Mike: "She is thot."

Pat: "Is it dangerous she is?"

Mike: "Divil a bit. She's too weak to be dangerous any more!"—Sun.

Too Good to Be True.

It is said that the knocking in trade will all stop;
That honesty now is the rule.
The man who works hard now has come to the top,
And trick is no more a good tool.
The merchant who tells but the truth now must win;
The fakir but trouble will brew,
For all must be fair in the trade that we're in.—
But, Oh, it's too good to be true. —Presto.

Plumbing in Up-to-Date Apartment House

One of the finest apartment houses of recent construction in Washington, D. C., is the Ventosa Apartment house. This structure is one of rare architectural beauty, fireproof throughout and a credit to the designer, its owner and the neighborhood. Considerable difficulty was experienced by the Bliss Ownership in completing it within the required time. due to labor troubles. Still, with the co-operation of Robert B. Caverly, of the firm of Robert B. Caverly, Inc., plumbing contractors, the plumbing, which delayed the completion, was satisfactorily installed.

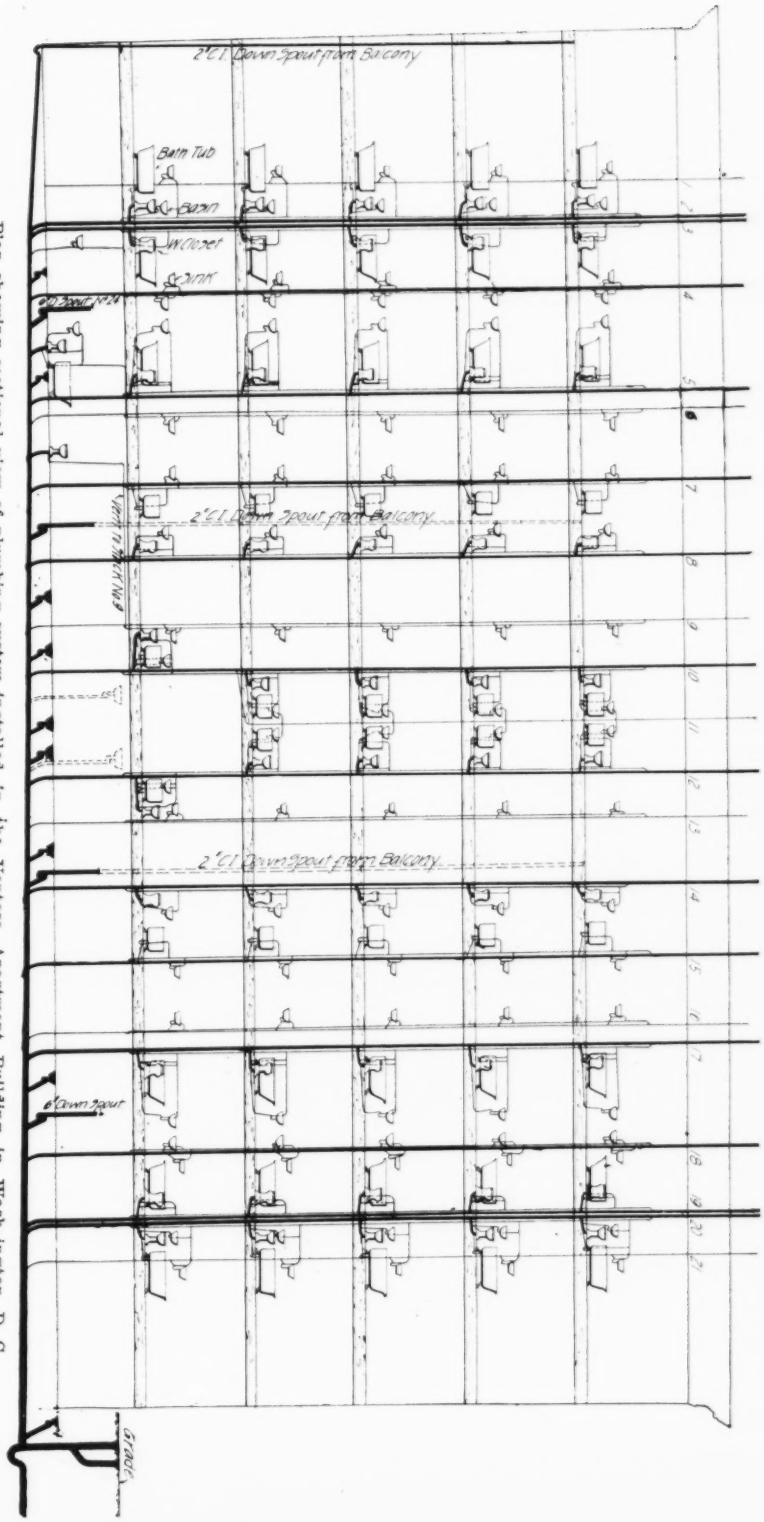
The work is shown in detail by the accompanying plumbing section and ground layout, while the following specifications for the work speak for themselves:

"All plumbing in the Ventosa Apartments at the southwest corner of First and B streets, N. W., shall be done strictly in accordance with the Plumbing Regulations of the District of Columbia.

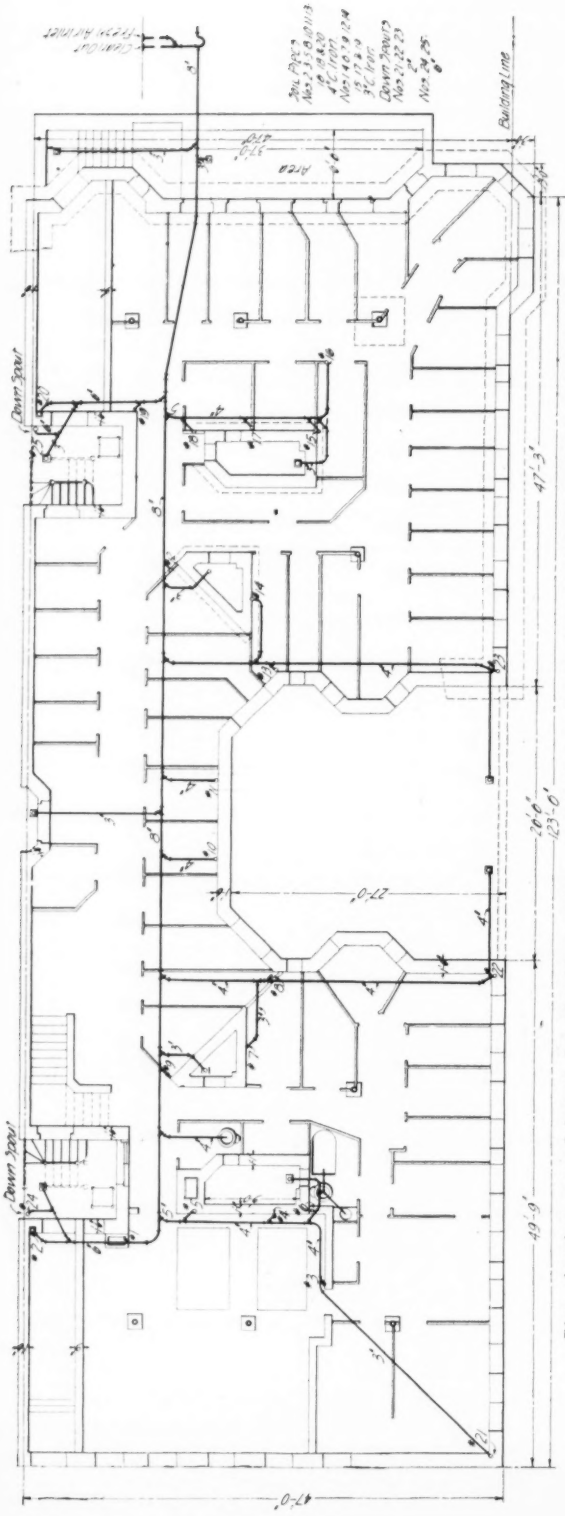
"Underground drain pipes to be of sizes marked on plans of XX heavy cast iron and to connect with sewer. The vertical main stacks to be of sizes required and to extend above roof. The downspouts to be received by C. I. pipes above the ground. Put traps under all downspouts and cesspools.

"The following fixtures will be furnished and properly set:

"Have 52 L. Wolff Mfg. Co.'s improved syphon jet



Plan showing sectional view of plumbing system installed in the Ventosa Apartment Building in Washington, D. C.



Plan showing ground layout for plumbing system as installed in the Ventosa Apartment Building in Washington, D. C.

water closets, 'The Superior,' complete with large new style recessed front low-tank with nickel-plated rod and white china pull, removable copper-lined cover, nickel-plated lower offset and supply pipe, heavy pattern seat and cover attached directly to closet bowl with heavy nickel-plated brass hinges, design complete as described.

"Lavatories—Fifty-one Jefferson enameled iron corner lavatories. English faucets, century wastes, 1½ New York Regulator traps, nickel-plated brass supplies with stop valves, china plates.

"Bath Tubs—Fifty-one Narro pattern baths, 5′ 0″ long, with heavy English double faucets. Calvess wastes, nickel-plated supplies, to floor, with stop valves. Name plates.

"Sinks—Fifty-one complete iron sinks 16x20″, with enameled backs, concealed wall hangers, English pattern sink faucets, 1½″ lead traps. Have one galvanized iron sink in boiler room where shown.

"Have large-sized bell traps where shown.

"Have raised lead safes under all refrigerators, with lead P trap, 1½″ waste pipe with galvanized recessed drainage fittings. Risers to extend through roof; waste of same to drain into proper trapped and vented fixtures.

"Water Supply—Connect with main in street (two taps) and supply the different risers from the same.

"Have Jefferson globe valve for each line of risers of hot and cold water; besides have valve for main supply near meter; also have extra valve to cut off hot and cold water for each bathroom and each kitchen.

"Have one 750-gallon hot-water boiler located in the basement where shown and supply fixtures from same.

"Gas Fitting—The gas company will run gas pipe from the street main to meters, and from there supply the different apartments with 1″ risers. Each apartment to have separate meter, located in a row under stairs, where directed. Lights in all public corridors to be connected with a separate meter. Leave outlets where marked on plans.

"The plumber shall furnish certificate from the Plumbing Inspector and from the gas company that his work is approved.

"He shall make all connections with gas ranges, provide for water during the erection of the building, also for water closet for the workmen, deliver the job in perfect working order and guarantee the plumbing for one year."

Sterile Drinking Water for Large Buildings*

By Thomas N. Thomson, Sanitary Engineer, Scranton, Pa.
Member A. S. I. P. S. E.

(Conclusion.)

The United States Government, a few of the foreign governments, and a few architects and large manufacturing concerns in the United States have really used a number of sterilizers built on the aforesaid principles with very satisfactory results. These sterilizers are constructed on the regenerative plan; that is to say, the heat in the hot sterile water is used for heating the incoming raw water so that the actual amount of heat used in sterilization is that which is lost by radiation from the device plus a small amount escaping with the sterile water; but it is so small that it hardly pays to consider it. The fundamental principles of operation of this device can best be understood by reference to Fig. 1.

A small water tank *a* supplied with raw water, at any pressure, through a pipe *b* and ball cock *c* is connected to the bottom of the heating chamber *d* of the sterilizer by a pipe *e*. A watertight partition *f* separates the water in *d* from the water in the cooling chamber *g*. A chamber *h* connects with the top of the chamber *d* and a pipe *i* rises from the top of *h* forming a loop, the top of which is higher than the water line in *a*, the outlet of the loop discharging openly into the top of the chamber *g*. A Bunsen flame *j* is shown impinging on the bottom of *h*. An overflow pipe *k* prevents the water line in *a* from rising above this point; and an outlet pipe *l* discharges with an open end about the level of the water line in *a*.

A brief study of this illustration will show that it is impossible for water to flow from *a* to *l* unless it be first lifted and thrown over the loop or bridge *i*. If, however, the Bunsen burner is lighted, the water in *h* becomes hot, then boils and globules of steam produced at the bottom of *h* lift portions of the boiling water up and over the bridge, where they fall by gravity into the chamber *g*. In descending through *g* the hot water being in contact with the partition *f* imparts heat to the cold water rising in *d* so that the boiled water descending in *g* is at practically the same temperature as the cold incoming raw water before it enters the discharge pipe *l*. The short period of boiling and the rapid subsequent cooling do not separate enough of the gases from the water to make it insipid or in any way disagreeable to drink. This at least was my experience while examining, on behalf of the International Correspondence Schools of Scranton, Pa., some sterilizer plants which operated on the previously described principle.

Fig. 2 shows a commercial sterilizer built on the foregoing principles and used, I am informed, quite extensively on the government works at the Isthmus of Panama, where the government, in order to make a success of its operations, must protect the health of its workers.

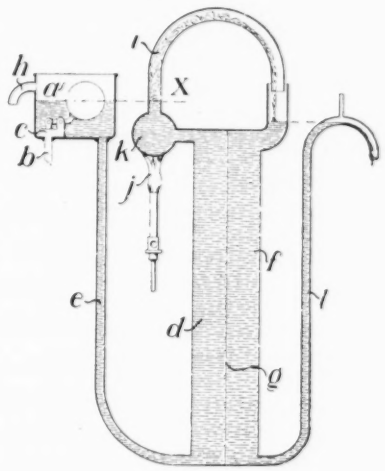


Fig. 1.

It is principally composed of the raw water supply connections which are shown at the left of the cut, Fig. 2; the sterile water connections which are shown at the right; and the sterilizer proper which is shown in the middle of the cut. The construction of the ball cock chamber and raw water connections is clearly shown and their operation is so simple as to require no explanation, so also is the construction of the sterile water connections and the outlet cup shown at the right so plain and simple as to require no description further than the fact that the inner cup acts as an overflow to the sterilizer. The base of the sterilizer is a brass casting. The body of the sterilizer is copper and encloses what is known as the heat exchange chamber, the body being entirely covered with a non-conducting material which is enclosed by a Russia iron jacket. A large number of small tubes extend vertically inside the heat exchange chamber, connect-

*Read at the third annual meeting of the American Society of Inspectors of Plumbing and Sanitary Engineers, Chicago, February 10-12, 1908.

ing the chamber in the base with the open pan at the top. The chamber shown projecting from the right-hand side of the heat exchange chamber is the heater in which the water is boiled. In this chamber is another chamber having a number of vertical steam heated tubes, the top of the chamber being provided with a fountain tube

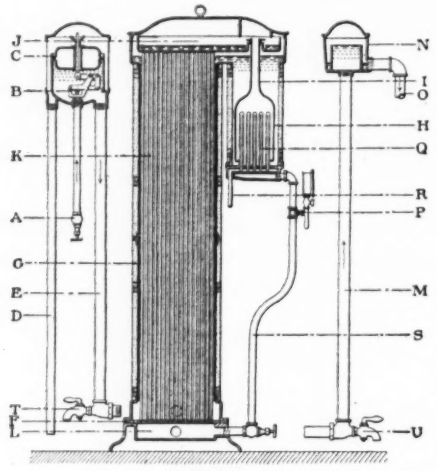


FIG. 2.

KEY TO PARTS IN FIG. 2.

A—Raw Water Inlet Valve.
B—Float Operated Valve, for maintaining raw water level.
C—Overflow Weir—placed slightly above raw water level.
D—Overflow Tube—leading from over-flow weir.
E—Raw Water Leg—through which raw water descends and enters heat exchange above tube sheet outside of tubes.
F—Tube Sheet, forming top of sterile water chamber and bottom of raw water chamber.
G—Heat Exchange—wherein the heat of the hot, sterile water descending inside of tubes is transferred to the cold, raw water rising outside of tubes.
H—Heater in which water is sterilized.
I—Fountain Tube through which the water is elevated by boiling.
J—Hot Water Pan into which the water is elevated by fountain tube.
K—Heat Exchange Tubes on outside of which cold raw water rises and through interior of which the hot sterile water descends.
L—Sterile Water Chamber into which heat exchange tubes discharge.
M—Sterile Water Leg through which sterile water ascends.
N—Sterile Water Discharge Cup Weir, for maintaining water level in J.
O—Sterile Water Discharge Tube.
P—Steam Inlet.
Q—Steam Heating Tubes in Heater.
R—Condensed Steam Discharge to steam trap.
S—Steaming Out Pipe for resterlizing apparatus.
T—Washout Cock of raw water compartment.
U—Washout Cock of sterile water compartment.

through which the water is elevated by boiling as shown. The offset pipe with the gauge attached is the steam pipe, while the smaller pipe shown is the condensation pipe. The heater is also covered with non-conducting material and a sheet metal jacket to prevent an excessive loss of heat. The cover on top of the sterilizer is loose so that atmospheric pressure only exists in the space under it. All the metal which comes in contact with the water is coated with block tin. An examination of the device in Fig. 2 will show how the principles previously described and shown in Fig. 1 have been developed and put into an actual practical and serviceable machine, one or more of which can easily be installed in any building by any plumber, or even connected up to a municipal water supply plant if desired. They can be made, and are made, small enough to supply a private residence, and there is no structural limit to the size and capacity that may be employed for municipal work.

Having described both the principles of operation and the general construction of the sterilizer, I will now present in Fig. 3, a simple scheme for the installation of a sterilizer system having a capacity of 300 gallons per hour.

I have not shown this plant located in any particular building as I do not deem it necessary. The system of delivering and circulating drinking water through buildings is so well known to you that I have shown only the vital features. This plant would be sufficient for a varying number of persons, depending upon the nature of the building in which it is installed and the character of the work being done in the building, also upon the method of distribution. If in an office building with two fountains on each floor, it would largely depend upon the number of offices and persons on each floor, just how many floors could be properly supplied. A fair average for general office buildings where there are public drinking fountains in the halls, is about 1 gallon per capita per day. If there are fountains in each office, the consumption of water is higher, both because the water is more handy and because of the unavoidable leaking of faucets, so that in such cases the consumption is about 1 1-2 gallons per capita per day.

In factories, too, the variation is very large, depending on the nature of the work. Hospitals again have another consumption per capita ranging from 2 to 6 or even 10 gallons per capita per day, according to whether there is a large proportion of surgical or fever cases where much bathing is necessary. Hotels still have another rate of consumption and a large variation according to whether on the American plan with one large dining room open only at certain hours, or whether there are a number of cafes or private dining rooms open nearly all the day and

doing a large theater or evening business. The rate of consumption has to be judged in all these instances to suit the particular and peculiar conditions of the place.

This plant is substantially composed of two sterilizer units A, B, a low pressure boiled water storage tank C and a steam pump D. The sterilizers have each a capacity of 150 gallons per hour. A low pressure steam pipe is connected to the base of each boiling chamber, the condensation from each chamber passing off to waste through the steam trap shown. A steam gauge is shown on each steam supply to each boiling chamber. The arrows show the direction of the flow of the water as it passes through the sterilizers. It will be seen that both sterilizers connect to one discharge pipe which enters into the side of the tank C near the top. The tank C is a 500 gallon steel glass lined upright tank, provided with a manhole door on top for cleaning out purposes. An ammonia coil is shown placed inside the tank to cool the water. The pump D takes its suction from the bottom of the tank, forces the cooled water up to the several drinking fountains from which the surplus returns through a separate circulation pipe and enters the top of the tank. This pump is supposed to circulate the cold boiled water continuously and insure a steady supply all through the building. The circulating pump shown is a 3 x 2 x 3 duplex, and should easily do the work required of it. If a special refrigerating machine is used with this apparatus, it may be a 2-ton machine of any standard make.

The size of the coil used for this installation may be about 300 ft. of 1-inch pipe. The steam supply is usualiy taken direct from the line running from the boilers, a pressure regulator being used to reduce the pressure to about 5 lbs. in the sterilizers.

This apparatus requires practically no attention beyond oiling the circulating pump and insures a cool, palatable and absolutely safe drinking water at the fountains, even although the raw water is seriously contaminated with typhoid germs. If the apparatus and tank are placed on the top floor of a building, then a gravity supply can be obtained and the circulating pump omitted.

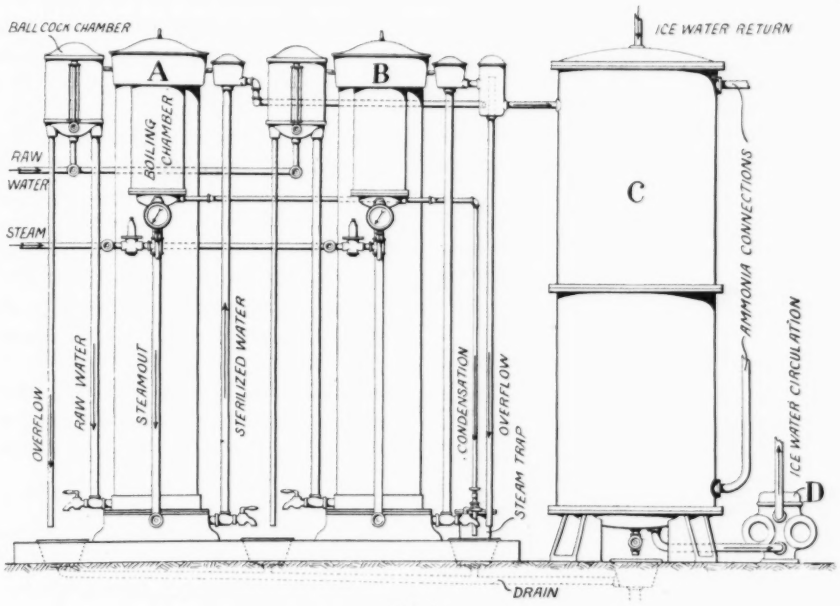


Fig. 3.

As a sterilizer is a hygienic device of a very high order and as its cost of operation is practically nothing, being about 5 cents per 1,000 gallons for steam heat, considering coal at $5.00 per ton, it appears to me that progressive sanitary engineers should give it consideration while preparing plans for the equipment of large buildings.

I am indebted to The Forbes Co., Philadelphia, for courtesies extended in the preparation of this paper.

The Mystery of Snyder's Pets

(By "Observer")

Written expressly for "Domestic Engineering."

We will call him Snyder, principally because that is not his name and his real identity can be concealed under the alias. Snyder was a Dutchman, but that was not Snyder's fault; rather, it was his good fortune, or he would not have been the hero of our story. Being a Dutchman, Snyder was genial, and beamed with good nature. If you were hard pressed by business troubles, were low in spirits, or had a case of the Blue Devils, fit to drive you to distraction, Snyder had but to intrude his genial cherub-like countenance and three hundred pounds of avoirdupois into your presence, when—presto—his sunny disposition dispelled the gloom, as the sun disperses night. Snyder always looked on the bright side of life. It was part of his creed always to hunt for the one shining spot which he held illumined the darkest situations.

Snyder was not of symmetrical proportions. Life had been kind to him and he showed it in the capacious swelling under his expansive waistcoat, and the generous roll which encircled his chops like a misplaced halo. It was said by some of Snyder's whimsical but envious neighbors that they had seen many animals much less fit for slaughter which had been led to the shambles; but these mean insinuations went unnoticed by Snyder and his friends and did not detract one bit from his fair fame.

"I'M UP IN ARMS AGAIN!"
As the baby remarked at 2 a. m.
—Sloper's Half Holiday.

Snyder was a plumber—we might say is—for he still has a modest little place of business on one of the principal thoroughfares of that Blue Grass City, noted for the speed of its horses, beauty of its women, and excellence of its corn whiskey.

Louisville—or to be more exact, that part of Louisville which knew of his existence—was proud of Snyder. He was not like the weather vane on his housetop, veered by every wind that blew, from one position of public policy or private expediency to another. No; not Snyder! Rather was he like the Rock of Gibraltar, a monument to prudential firmness, and stability. That is, he was to every one but his dear little wife, Katrina. Once, Snyder had formed an opinion or decided on a policy, he was uncompromising and unchanging. Brain storms might sweep his mighty intellect; sentiment tug at his sensitive feelings, but he would not swerve one jot or tittle from his purpose. He might be uprooted like the mighty oak, but he would not bend like the yielding reed. Only when the charming Katrina insisted on a change, would the adamantine Snyder unbend. Years of association, if not of companionship, had taught him that though his wife was small, her tongue was sharp; and only under the spur of dire necessity would he cross her wishes.

But now Snyder was in trouble. For the first time in their long-seeming married life their wills had had a serious clash. As this very truthful chronicle has already stated, Snyder was a big man, and every ounce of his pulsating person was charged with kindness and affection. Disappointed in a family, and not always understood by his excitable little jewel of a wife, Snyder had turned to dumb animals for sympathy and affection, and wished to own some pets. But the nervous little Katrina did not like animals and objected to his plan. Many and angry were the discussions they held on the subject before Snyder cast discretion and consequence to the winds, and bartered his peace of mind and several pieces of silver, for a dog. And what a dog! It was but a pup, but what a world of destruction was done up in that Newfoundland pup's hide! He was a friendly dog, and when the good, dear little frau of Snyder's first went into the courtyard, he showed his affection by placing his paws lovingly on her shoulders and licking her face. "Kissing her," Snyder said it was, when with much upbraiding she told him the story, and it only in-

creased his regard for that dog which showed such unmistakable signs of affection. Not so the good little housewife. She had been forced to crawl to the gate on her hands and knees to keep from being again knocked down by the club-like paws of the playful brute, and she felt too keenly the ignominy of her retreat, to say nothing of the revolt of Snyder, in going counter to her wishes, to feel aught but bitterness toward that dog.

What Snyder suffered for that animal no one knows, and the Hero of our story is too chivalrous to tell. Suffice it to say that for every act of depredation, spoliation, plunder, pillage, brigandage or piracy that dog was guilty of, on Snyder's devoted head fell the scourge of retribution. And what acts of spoliation that pup was guilty of! No lines were so high that the clothes could not be reached by his dirty paws; no rugs could be hung on the fence without finding ready transit to the courtyard, and nothing which ever came within reach of that pup was ever recovered again but in tatters.

But Snyder's cup of trouble was not yet full. To add to his brief joy and his wife's permanent anger, a good, kind but misguided friend, gave Snyder a goat. Now, of all animals, a goat was what Snyder most heartily desired, and to which his wife was the most bitterly opposed. In view of these facts it is not strange that people are not wanting, who insinuate that Snyder's friend was actuated by mercenary motives, and who bolster up their absurd suspicions by averring that shortly after the presentation of the goat, several pieces of lucre were surreptitiously transferred from Snyder's fat wallet to the friend's trousers pocket. Be that as it may, Snyder was now happy, and lost no time in making friends with his new pet. "Bock" he called the goat, in honor of his favorite beverage, and "Hercules" he named the dog in consideration of its destructive strength. Bock and Hercules lived together in the little courtyard back of Snyder's shop, but they did not dwell in peace and harmony. From the very beginning, a bitter enmity existed between them and even the good offices of their master could not establish them on terms of peace and friendship. Of Snyder they seemed very fond; but the sharp-tongued little wife beat many an undignified retreat after sallying forth to rescue some of her cherished possessions from the destructive pair. For, be it known, that the only time hostilities were suspended between the belligerent pets, was when united in offensive operations against their common enemy, the good Snyder's wife. If Hercules, by an extra high jump, succeeded in abstracting a nice clean article from the line, then would the goat follow him around the yard placidly eating the fragments torn from the cloth by the playful pup.

Cessation of hostilities were only of short duration, however; as soon as all evidence of crime had disappeared down the gluttonous throat of the omnivorous Bock, war to the bitter—we might almost say butter—end was resumed. Indian tactics were employed and the battles became a series of ambus-

"Bock, wide awake and alert, would occasionally protrude his bewhiskered head from his refuge, to reconnoiter."

cades and surprises. Let Hercules stand in the courtyard absently dreaming of congenial company of his own kind outside the walls which made his home a prison, and silently weeping, as he thought of what might have been. Bock, wide awake and alert, would occasionally protrude his bewhiskered head from his refuge in the barn, to reconnoiter. If Hercules stood with his rear exposed, and seemed sufficiently lost in thought, there was a sudden attack, a resounding thump, and Hercules, growling his rage, rolled over in a heap, while the artful Bock beat a hasty retreat to the safety of the barn.

Sometimes conditions were reversed and Bock stood chewing his cud, while his thoughts wandered to green fields and—nanny. Hercules, watching silently, with vengeful eyes, from the depth of his kennel, would wait until the hateful Bock was so lost in thought as to be unconscious of his movements; then, there was a quick but silent dart and the next moment the triumphant pup was back in the sanctuary of his kennel, exultingly chewing a tuft from his enemy's whisker, while the air resounded with angry notes from the despoiled goat.

Katrina, from the back balcony of the house, often witnessed these attacks and they filled her

with joy. She had no favorite, so was not moved by compassion whichever pet was injured. If she could have had her way, as she often told her lord and master, she would sell them to the butcher for sausage meat. Indeed so persistent was she on this subject that our good friend Snyder began to loathe the name of sausage.

But all things must have an end. Already the little tuft of whisker which ornamented Snyder's expansive chin, had taken on a deeper shade of gray, and resembled, as his angry spouse often told him, the whiskers of the goat he thought more of than his wife, "else why did he keep such a nuisance around to torment her?" Waxing determined as she grew more excited, the much tormented little Katrina insisted on having restored to her the use of the yard, and demanded that the pets be sold or confined to one part of the court.

Snyder's sunny disposition could not hold out much longer against the oft recurring attacks of his sharp-tongued little wife, which grew more frequent as time passed, without bringing her the much demanded relief. But he was determined not to part with his pets. No! She could talk until doomsday and it would do no good. He would not sell his pets, but he would compromise with her and confine them to different corners of the yard. Having confided this bit of information to his wife, with a sigh of resignation, Snyder picked up a rope and going to the enclosure caught the gentle Bock near the kennel. Hercules stood looking on with curious eyes in which was a look of cunning; and when Snyder's arm encircled Bock's neck, the pup's opportunity had come. With a quick attack he made a snap; but the watchful Bock drew back out of range and the iron jaws closed relentlessly on Snyder's precious whisker. Oh the agony of that moment! The ingratitude of that dog. Tears of pain filled Snyder's eyes and a million needles pierced his chin. He thought he heard a smothered laugh, and through the mist he beheld his Katrina holding her sides as she disappeared from the balcony into the kitchen.

"Gott in Himmel! I'll kill that dog!" exclaimed the enraged Snyder. But before he reached the kennel, his big tender nature had softened, his eyes cleared, and the needles stopped pricking. His sunny nature asserted itself and he would not whip his pet. Why should he? Was it not an accident? Had not the dog intended biting the goat? But the loss of some whiskers had taught Snyder a lesson and he would now tie the dog first.

Hercules had been watching his master furtively out of the corner of his eyes, and cringed as he saw him approach with the rope. Shivering and cringing, he awaited the dread stroke, until fear overcame consequences and he bolted, just as Snyder launched himself at the elusive pup. It is no joke to miss the tackle and be brought to an abrupt stop by the unfeeling bricks of a paved courtyard; and when Snyder raised his ponderous weight to a perpendicular position, he was mad—outrageously but not unreasonably mad. Glancing at the house he saw a curtain shake and it did not smooth his ruffled feelings to know that behind that screen his shrewish little wife was laughing at him. But Snyder was fired with determination, and now purposed catching that dog. Fully aware of the mistake it had made and fearing to suffer for lèse majesté, the pup kept discreetly out of his master's reach. Around and around the court they flew, now Snyder after the dog, next the dog after Snyder. Hotter and hotter grew the chase and angrier and angrier grew our hero. They might have been running yet if the pup in an unfortunate moment had not become confused and run plump into the triumphant Snyder, who, hot and perspiring, grasped the unlucky animal by the collar, and brought him to a stop before the refuge of the artful Bock. Hercules gave up the struggle when the mammoth Sny-

"Waiting for Train Time." Members of the Pennsylvania delegation on their way to the recent convention of the National Association of Master Plumbers held in Boston. Reading from left to right, they are: Mrs. Wm. H. Doyle, of Philadelphia; Geo. J. Smith, Miss and Mrs. Matchensky, all of Pottsville, Pa. Photograph by our G. Wallace Smith.

der straddled his back and pressed his ribs as in a vise. But there was succor at hand, and from where it was least expected. The amazed Bock saw with gratitude his old enemy held fast with no means of guarding his rear. He was setting himself for a mighty charge when to his astonished sight he saw his master stoop forward and in his place there arose and towered above the dog a rear elevation marvelous for its immensity, if not for its architectural beauty. Goat nature could stand no more. Forgetting his old enemy, the dog, he gave a sudden forward bound, uttered his well-known battle cry and the next instant Snyder, the sunny, affectionate Snyder, was rolling on the ground, a struggling mass of flesh, kicks and gutteral sounds. The first distinguishable note that came to Snyder's ears, as he struggled to his feet, was a merry peal of laughter from his wife, Katrina. That was the last straw and it broke the back of the genial Snyder's kindly disposition. By the time he was safely on his feet, Snyder's sunny nature was entirely gone; all the brightness had left his disposition, which was now Stygian darkness. The milk of human kindness for which he was loved had been altered. There was no kindness left, and the milk had turned to curd. Some lay this change to the ingratitude of his pets, but many there are who attribute the change to the sharp tongue of his wife. Without looking at his former pets, or noticing his wife, Snyder stalked angrily but majestically out of the yard and disappeared in his friend's little lager beer saloon on the corner.

The next morning, Snyder was seen in earnest conversation with a friend of his who keeps a butcher shop, and shortly after that, Snyder's pets mysteriously disappeared. It is said by his Katrina, who loves to tease him, that the pets were ground to sausage meat in a great big machine. This Snyder indignantly denies with such a show of anger that no one cares to question further; so the truth will probably never be known and we do not care to express ourselves on a subject on which there is so little evidence. But this we know: There is some dark secret on Snyder's mind about which he is unduly sensitive; and if you want to get him mad—wildly, blindly, uncontrollably mad—just go into his place of business innocently singing—

"Oh, Snyder, don't you want to a buy a dog?
He'll make good sausage meat."

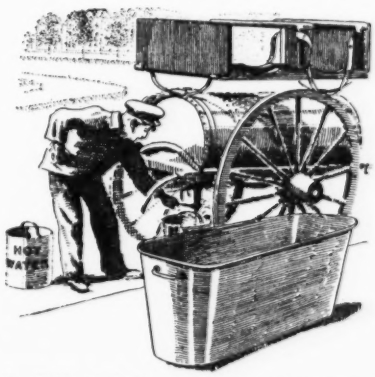
Helps.

"Money doesn't bring happiness."

"No, but it's a good drug to make you forget you've missed the things that do."

Peddling Baths in Paris

There is plenty of water in Paris and quantities of it are used on the streets by men with lines of hose made in metallic sections, with flexible joints, each section mounted on wheels. But it is almost impossible to get water above the street level, and quite impossible to get any quantity of it hot under normal conditions, says "The Technical World Magazine." Only a few of the very newest houses in Paris have water above the street level. This is true of hotels as well as of private houses. A hotel keeper may send up a quart of hot water to your room, but filling a tub would probably be beyond the capacity of his establishment. Many Parisians bathe in big bath houses which line the Seine. In places these houses occupy a greater part of the river. But if a Parisian wants a hot bath at home he turns to the peripatetic bath tub. This originates in a bathing establishment, of which there



The Paris Bath Peddler ready to serve a customer. From illustration in "Popular Mechanics," Chicago.

are many. The bath peddler, as he leaves his establishment, has two straps over his shoulders and he stands between the shafts of a two-wheeled cart. On this cart is a tank, surmounted by a substantial bath tub, provided with castors. In front of the tank hang two large metal buckets and a yoke. The bath man draws this apparatus through the streets to your home. When you want a hot tub, you order one delivered at a time fixed. The bath man comes around with his apparatus, stops in front of your house, lifts the tub from the top of the tank, puts it over his head like a hood and carries it upstairs to your room. Returning to the street he draws hot water in the buckets, hangs them at each end of the yoke which he carries across his shoulder, and so conveys water to the tub. When the tub is full he retires and you take your bath. Then he comes upstairs, empties the tub by means of his buckets and carries the tub and buckets away. His passage through the streets is an everyday sight to the Parisians and arouses no comment.

Take revenge upon a rival by surpassing him.

No one ever got in trouble over something he did not say.

Questions and Answers

THE PROPER FUNCTION OF THE SLIDE IN A FUEL DOOR OF A HEATING BOILER.

Minneapolis, Minn.—To the Editor of "Domestic Engineering." Sir:—To settle a dispute will you have the kindness to give us information as to the proper function of the slide in a fuel door of a steam or hot water heater and describe the proper method of using it?

T. C. A.

Answers.

Detroit, Mich.—The proper function of the slide in a fuel door of a steam or hot water heater is to admit sufficient air into the fire pot to consume the gases which escape from the fuel when the ash pit door and the slide in the ash pit door are both closed. Consequently this slide should properly be open when the ash pit door and the slide in the ash pit door are both closed, or, in other words, when the fire is checked. In case there were no opening provided for the admission of a certain amount of oxygen into the fire pot, the gases would partly escape into the chimney unconsumed and a portion of them might and probably would find egress through openings into the building proper. In the great majority of installations we believe that this slide in the fuel door is seldom if ever used as it should be.

United States Heater Company, E. R. Leyman,
Engineer Mechanical Dept.

Kewanee, Ill.—Referring to the question as to the proper function of the slide in the fuel door of a steam or hot water boiler, we have some information to the effect that it is placed in the ordinary cast iron boiler for the purpose of allowing a small amount of air over the fire to help combustion at times when the fire is first started. The slide is also used for allowing cold air into the fire pot to be used in the same manner as the opening of a door in a stove, to cool the boiler down. However, we do not know that it is used for this purpose very often. We have noticed that the instructions for operating cast iron boilers say that this slide is simply to be used for the enhancing of combustion. On the boilers which we manufacture the construction is different, and in the soft coal boilers which are magazine feed we use this little slide in the feed door simply to allow enough air to go through to cause a down draft so that the gases will not accumulate in the magazine. We do not figure that it increases or helps the combustion to any great extent.

Kewanee Boiler Company A. T. Kellogg,
Engineer.

Chicago, Ill.—Replying to the question about the proper function of the slide in the fuel door of a steam or hot water boiler, we would state that the openings in the firedoor of a steam or hot water boiler are intended for the admission of oxygen or air after a fresh supply of fuel has been added to the fire, in order that the gases generated from the fuel shall receive sufficient oxygen to cause ignition and in this way secure combustion of the gases within the firepot, which otherwise would pass off unconsumed, causing more or less waste in the fuel used.

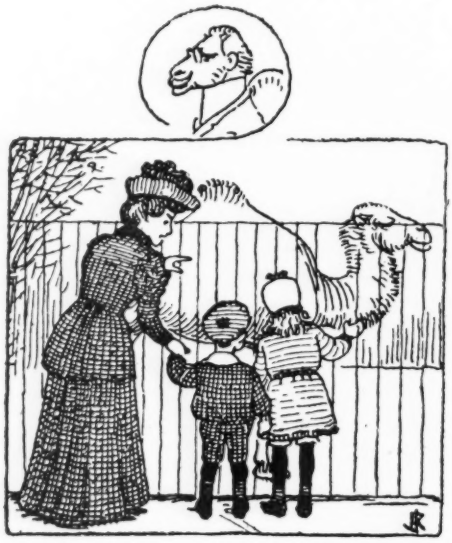
The operation of the slide is dependent largely on the chimney draft, also on the close fitting of the firedoor, as under strong draft it will be found unnecessary to open the slide to its full extent. Also, in the case of a loose fitting door, sufficient air may be drawn in to cause ignition of the gases without the use of the slide.

At times when the gases are burned off the fuel when the fuel is red on top, it is unnecessary to open the slide, as under these conditions the opening in the firedoor would act as a check draft rather than as an aid to combustion.

Holland Radiator Company, N. W. Whitelaw,
Manager Boiler Department.

Chicago, Ill.—The slide in fuel door of hot water and steam heaters is for two purposes: One of them, of course, is to cool off the fire, and the other one is to permit of oxygen passing over the top of the coal to mix with the gases and ignite them. It is a difficult matter, when the fire is deadened down, for the air to pass through the fire, and the gas forms above the coals and does not ignite. As soon as the oxygen is admitted over the top of the coal, the gases ignite and are burnt up; otherwise it passes up the chimney and does not become of any benefit. By opening this slide, as stated above, the oxygen is allowed to mix with the gas and ignite it. This can be readily seen by banking the fire and opening and closing the slide.

The John Davis Company, Geo. F. Hughson,
Vice-President.



MRS. JONES, who was born and brought up in the country, but now lives in Chicago, is in Lincoln Park with her children entertaining them as follows: "Yes, Willie and Mabel, you really have much more fun than I had when I was your age. You grow up in a large city where you see everything. I had, for instance, never seen a dromedary until I met your papa."

The New Minister: "Do you know who I am, my little man?"

Little Billy: "Certainly. Don't you know who you are?"—Judge.

In Early Days—VIII

By Herbert S. Renton

Dealers in Plumbers' Supplies.

The thousand and one jimcracks now carried regularly in stock were unknown to the old-time plumber, who dealt with the manufacturers direct, and the idea of the supply house had not been evolved.

One of these ancient craftsmen would say: "I deal with Abendroth or Mott for iron pipe and fittings, Tathan for lead, Pollack & Connor, J. & H. Jones, H. F. Johnson or Morrison for brass work, Bartholomew, Craigie or Carr for closets, Coleman for pumps and Miller & Coates for earthenware." The idea of carrying all of these supplies by one concern was unheard of.

Miller & Coates of Pearl street, near Beekman, New York City, were the first regular dealers in general supplies. They were importers of Brown, Westhead & Moore's basins and earthenware before the potteries at Trenton had succeeded in getting a foothold, and it must be admitted that for many years the English ware was superior to the domestic article. It did not craze as the American ware did—and the real old-timer would use nothing else but the Brown, Westhead & Moore ware handled by Miller & Coates.

Gradually supplies were added to the stock of Miller & Coates, brass goods coming first, closets and heavier goods later. Mr. Kelly was the head and front of the concern. You would find Miller & Coates' card in every first-class shop in the United States—they were the first to send out drummers. The old manufacturers never even thought of a personal representative. Frank Rorke, now with the J. L. Mott Iron Works, traveled over the land for many years taking orders for Miller & Coates in the last century. He is not an old man yet by any means. Thomas H. Hutchinson, now prominent in the trade in New York, grew up with Miller & Coates. The old firm was not up to the times—failed twice and finally closed up.

Following up the lead of Miller & Coates, Waefelaer & Duysters bloomed out in Beekman street with Supply House No. 2, distributing all of the goods a plumber needed, and taking on many new specialties. The plumber complained that every day some new article was foisted upon him. I regarded this grumbling as evidence of the trade's "growing pains."

Waefelaer & Duysters grew wealthy, but they did not get along well together. For eight years the partners did not speak. If Mr. Waefelaer wanted to say anything to Duysters the manager, George Wood, was the means of communication, and if Mr. Duysters wished to speak to Mr. Waefelaer he told Mr. Wood what to say. Poor George Wood! He was one of the most popular men ever known in the trade. Urbane, magnetic, a splendid salesman—he was king pin of the flourishing new industry known as "Plumbers' Supplies." Waefelaer & Duysters separated, the latter retiring and the business was continued by Louis Waefelaer at another location on Beekman street. But the life had gone out of it. Waefelaer struggled on trying to get a foothold for trade in New Jersey and out of town, but finally gave up, went out of business and died. George Wood, perhaps the best salesman of plumbers' goods ever connected with the trade, drank deeper and deeper until he became a wreck, and drifted about a nuisance to himself and his friends. The last time I saw him he was holding up a lamp post, unable to go one way or the other. Health, money, everything, gone. He died shortly after. Poor Wood! He fell a victim to the insane notion that a salesman must polish the front of a bar every time he makes a sale. That idea has gradually yielded to "merit and price" as the basis of trade. But in the old days you had to be a good fellow and drink. I became convinced of the error of this when I first went on the road, and I never offered a cigar even with the idea of influencing trade, and time has demonstrated the fallacy of the old-time cry, "You've got to do it." Business is business, but in the "good old days" it was get on the best side of a man, humor his weaknesses, take him out and "get his order." There was another Wood in the business very different from George Wood. He was manager for the uptown branch of the Colwell Lead Co. when old Mr. Hooper was alive. A tall, solemn individual—a veritable Foxy Quiller, who, at the suggestion of anything deep or sly, would put a long finger on the side of his nose and murmur "umah!"

Chas. Harrison, who patented a faucet as early as 1856, succeeded the sterling old brass concern of J. & H. Jones, and followed the new notion of selling the plumber everything he used. Their great specialty was plumbers' tools, and many boss plumbers can look back to the first kit of tools they ever owned as journeymen purchased from Chas. Harrison & Co. E. M. Towne, afterward with J. L. Mott, and with that firm yet at last accounts, was the company.

The Henry Huber Co. was an old manufacturing concern that was compelled to follow the trend of the trade and sell the line of plumbers' goods. Brass

Group of supply men in front of Abendroth Brothers' exhibit in Exhibition hall at the recent annual convention of the National Association of Master Plumbers, held in Boston, Mass. From photograph by our Mr. Winslow.

concerns like Peck Bros. and McNab & Harlin did likewise.

One of the early jobbing houses was that of Adee & Dellaree, who had a hard struggle until Dellaree dropped out and Adee struck the Zane Closet and self-closing work and put an enameled drip tray on the market, making a fortune with them in a few years. In Philadelphia Cooper, Jones & Cadbury added supplies to their manufactured products. Then came Blessing, Mulliken & Feather, and Stambach & Love, one of the very best concerns in this or any other line. Old brass men like McCambridge and Charles Perkes sold supplies, and there were many others who soon followed suit.

In Buffalo, the larger plumbers like Irlbacker & Davis, Cook, and J. D. Smith were half-way jobbers, before the present house of Dixon & Ballou began business.

Stultz & Mansur, the leading firm in Boston, were succeeded by Henry McShane of Baltimore. Phillips & Weeden and Sumner & Goodwin also dispensed plumbing goods in Boston.

Thos. Phillips & Co. was an early Providence, R. I., supply house and a rich, eccentric dealer and lead manufacturer. In the same town was L. H. Tillinghast, who used to say: "Goods are so cheap, sir, that the tide must float them in. Yes, sir, they don't cost anything—the tide floats 'em in!"

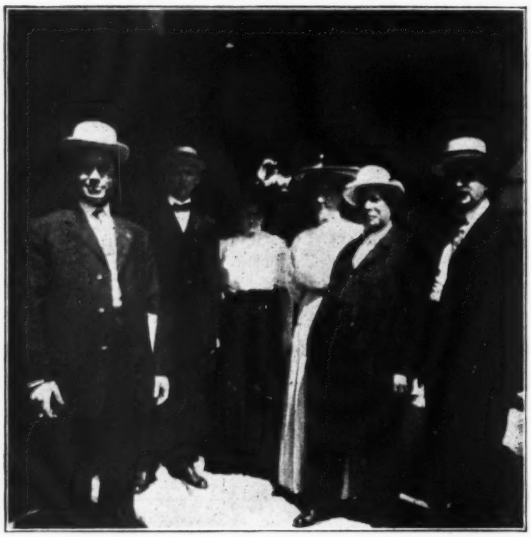
In Cincinnati, Merrie, Verhage & Co. were pioneers, and John D. Abraham did a large business in general supplies as the "Cincinnati Lead Works."

In St. Louis the N. O. Nelson Mfg. Co. came up from small beginnings and added general supplies to their own goods. L. M. Rumsey & Co. made pumps, but became merchants in lead, iron and brass. Rumsey & Sikemeier were also early in the field. Later came the Western Brass Co. and Cahill & Collins.

In Chicago the first real jobbers who did not manufacture anything were Peters & Patterson, whose store was on the south side of Washington street, between Dearborn and Clark streets. They came from Buffalo, N. Y., and put in a line of gas fixtures besides general supplies. Patterson committed suicide by jumping into the canal. Owen Owens was another pioneer also on Washington street, between Franklin and Market. An interesting fact about early Chicago days is that in 1863, when the three Crane Bros. left their basement shop, corner of Franklin and Washington streets, Darby & Small, another brass concern, moved in, but neither carried plumbers' supplies, while L. Wolff, who was originally a coppersmith, not only took on brass work, but was the first of the manufacturers to carry a line of plumbing material in Chicago. One of the forgotten firms of early times in Chicago was that of the Sullivan Brothers, who started around the corner from Wolff's in Jefferson street, near Lake street. One of the Sullivans had been secretary for the Crane Bros. They disappeared long ago, while R. T. Crane survives his brothers as head of the great concern that bears his name. In 1878 came J. B. Clow & Sons. It is safe to say that no city in the Union can claim a more substantial list of jobbers than Chicago.

In Baltimore Joshua Regester and Henry McShane added supplies to their brass business. The latter showed me through his works in 1884 and declared to me that he "made more money out of one Chime of Bells made in his bell foundry than in brass goods for plumbers in a year." I regard Henry McShane as one of the best and ablest of the brass manufacturers in this country. We "ne'r shall look on his like again." Then James Robertson of Montreal started a lead works in Baltimore with a supply adjunct managed by Mr. McPhail and Mr. McCubbin. The latter went to Washington and became a dealer himself. E. W. Shaefer & Co. were the only Washington jobbers up to that time who did not manufacture anything at all.

I am reminded that at first there were no free deliveries. Plumbers had to come and get their goods. When Henry McShane came to Brooklyn in 1881 with Thomas G. Knight as his manager, he started a system of free deliveries, and the old firms of George D. Kimber & Son and L. Brandeis were aghast. Kimber represented the old lead house of Tatham & Bros., while Brandeis made his own lead pipe—both were dealers in supplies. I remember A. C. Brownell in Boerum Place in the '60s as brass founderer and finisher. The elder Mr. Boardman, who is still alive and hearty, was connected with Brownell, and has been manager for all of the manufacturers and dealers who in succession have done business at the same location. Keeney & Clarke, Cregue, Ronalds & Co., Ronalds & Co., and now Ronalds & Johnson Co., and Mr. Fred Boardman, "the son of his father," is now manager of the one last named. There is no better name than Boardman in the supply trade in all the land from the early times until now.



"All ready to start." Some of the members of the Philadelphia delegation on their way to the recent convention of the National Association of Master Plumbers, held in Boston, Mass. Reading from left to right they are: Frank Welsh, Thos. B. Sutch, Mrs. Thos. B. Sutch, Mrs. Geo. F. Uber, William McCoach and Geo. F. Uber.

Wholesale Plumbing

The H. Mueller Manufacturing Company, of Decatur, Ill., has just bought ten lots south of the Wabash railroad between Monroe and Mercer streets. This plot of land has a frontage of 270 feet on Monroe street and 245 feet on Mercer street, with a depth of nearly 400 feet from Monroe to Mercer. The company intends to erect an iron foundry on part or all of this land next spring for the reason that the development of the business calls for such an addition to its large plant.

The National Plumbing and Heating Supply Company has started in business at Fifty-eighth and State streets, Chicago, with a complete line of heating and plumbing supplies. The officers of the company are E. C. Garrity, president; F. P. Garrity, secretary and treasurer; S. M. Murdock, vice-president. E. C. Garrity was formerly in the employ of Jas. B. Clow & Sons for ten years, and Mr. Murdock was for some time engaged with the Nye Die and Machine Works, of Chicago.

Building for September Exceeds That of a Year Ago.

Building for September shows that this country has not only recovered from the flurry of a year ago, but that there is improvement. In forty-seven cities permits were taken out for the construction of 14,992 buildings involving $45,364,944, against 12,930 buildings involving $41,088,084 for the corresponding month a year ago, a gain of 2,062 buildings and $4,276,860, or 10 per cent. This indicates that the improvement has been constant, and leads to the belief that building will continue active from now on. In August the majority of the cities included in the list showed a falling off. The conditions are reversed this time; twenty-nine cities showing increases and fifteen a loss.

The showing is remarkable, not only because of the large number of cities in which there is a gain over the figures of a year ago, but because of the remarkably high percentage of increase. Cities in which ordinarily it would be thought that if building were upon a par with that of a year ago they would be doing well have a percentage of increase which is so great that it should create much enthusiasm in respect to the future. New York City has an increase of 25 per cent, but the most noteworthy increase was in Paterson, N. J., of 201 per cent; Washington followed with 191; Birmingham, 138; Denver, 113; St. Paul, 86; Pueblo, 72; Atlanta, 70; Tacoma, 75; Milwaukee, 57; Cleveland, 52; Salt Lake City, 51; Kansas City, 47; Lincoln, 42; Worcester, 39; Louisville, 38; Brooklyn, 27; Mobile, 23; Spokane, 19; Omaha, 19.

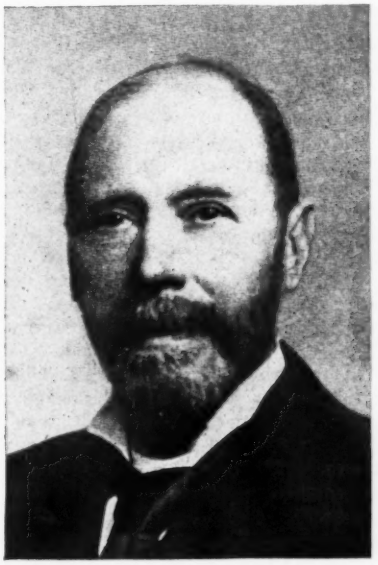
The cities showing a decrease are at widely separated points. They include Chicago, which, while it has an increase in the number of buildings, shows a decrease in cost equivalent to 6 per cent in the amount involved. In St. Louis there was a decrease of 24 per cent; Philadelphia, 18; Los Angeles, 23; Buffalo, 6; Baltimore, 40; Cincinnati, 22; Columbus, Ohio, 9; Duluth, 4; Toledo, 36; Dallas, 9; San Antonio, 33; Grand Rapids, 44; Terre Haute, 6, and St. Joseph, 40. Brooklyn, like New York, is rapidly recovering from inactivity and has for the first time in months a gain, the increase for this month being 27 per cent.

The most impressive feature of the compilation is the remarkable activity in cities of a certain class, many of which are surpassing in point of activity and growth older cities of twice the population. A good illustration of this is to be found in such cities as Indianapolis and Rochester, which are forging to the front at a remarkable rate, operations in each of these cities being on the basis of over half a million dollars a month, which speaks well for their future.

The volume of building in September for five years in a given number of cities:

Year.	Amount.
1903—27 cities	$20,074,211
1904—25 cities	29,121,328
1905—32 cities	32,069,104
1906—45 cities	42,150,868
1907—45 cities	36,980,616

Who's Who in Britain—II



J. Wright Clarke, of London, England, one of the best-known writers in England on the art and science of sanitary plumbing. He was born in Lincolnshire in 1844, entered the employment of Messrs. Beard & Dent (now Dent & Hellyer) in London, and remained with that firm till 1894, latterly attaining the position of assistant consulting and superintending sanitary engineer. He carried off the first honors medal at the first plumbing examination held by the City and Guilds Institute, in 1881, and he has been on the teaching staff of the Regent Street Polytechnic since 1882. He is favorably known as the author of several valuable works on plumbing and kindred subjects, including "Plumbing Practice," "Lectures to Plumbers," "Pumps," "Hydraulic Rams" and "Clarke's Tables." He has also contributed extensively to technical journals.

Trying to do business without advertising is like winking at a girl in the dark; you know what you are doing, but nobody else does.

Wholesale Heating

The Krekel Brothers Company, of White Plains, N. Y., has been incorporated, with a capital of $25,000, to manufacture boilers and heaters. The incorporators are J. L. Krekel, of Bronx; H. W. Krekel, of Orange, N. J.; H. Berje, of Jamaica, N. Y.

The Howard Thermostat Company, of Oswego, N. Y., has opened a Boston office, occupying quarters in the offices of the Gurney Heater Manufacturing Company. Frank A. Hale, the company's genial scout, is manager and master of ceremonies. He will be assisted by C. S. Merrill and H. J. Lougee, two of the company's popular representatives.

The Beaton & Corbin Manufacturing Company, of Southington, Conn., reports its business for 1908 considerably ahead of what it was at this date last year, the month of September just closed being its banner month since it began the manufacture of floor and ceiling plates some years ago, since when added room, facilities and men have been necessitated each year to care for its increasing trade. A number of new machines are being installed and men added to its force at this time to keep pace with orders.

The Illinois Chapter of the American Society of Heating and Ventilating Engineers held its annual business meeting and election on Monday evening, October 12, and from the large attendance it is evident that the same interest in the society's affairs which made the meetings so successful last winter still prevails. Reports by the various officers, telling of past accomplishments and plans for the future brought forth many expressions of approval, and the installation of the new officers for the coming season was the occasion for several clever speeches. A vote of thanks was given the outgoing officers for the excellent way in which they have handled the affairs of the chapter during the past season. The new officers of the chapter elected at this meeting were as follows: George Mehring, president; Edmund F. Capron, vice-president; John F. Hale, secretary; August Kehm, treasurer; board of governors—James Mackay, R. A. Widdicombe and Samuel R. Lewis. Although no positive statement has been given out as to the nature of the coming meetings, it is intimated that some surprises are in store for the members, as arrangements are being made for meetings at which prominent engineers will speak. The above meeting was held in a private dining room at the Union Restaurant, 111 Randolph street, Chicago, and was preceded by a substantial dinner, but it is planned to hold the regular monthly meetings of the chapter in the newly remodeled rooms of Western Society of Engineers in the Monadnock building.

Eastern Trade Golf Association Fall Tournament.

The regular fall tournament of the Eastern Trade Golf Association was held on Thursday, October 8, at the Garden City Golf Club, Garden City, Long Island, and was marked by an unusually large attendance. The course, which was secured for the association through the courtesy of F. C. Jennings, is 6,400 yards in length and the players had all they could do to finish the thirty-six holes before dark, and the committee was unable to run off the several other special events scheduled for the day. Some of the players were acquainted with the length of the course and arrived an hour earlier than the program called for, but even they had to hustle to get in before nightfall. It was two o'clock when the first 18 holes were played, and after gobbling down a few mouthfuls of luncheon the golfers hurried off to the links again. This necessary hustle prevented some of the players from doing their best. The weather was ideal, though, and the players were thankful for that, after the two previous wet plays. The best play of the day was that of J. B. Garfield, who came in with a gross score of 173. F. Douglas , who is an ex-national amateur champion, was second with 174 and was therefore handicapped with eight strokes plus his gross score. The prizes were awarded as follows: J. Barton Garfield, a gray jacket sweater; F. C. Jennings, a white canvas caddy bag; P. R. Jennings, pair doeskin golf gloves; Frank Barrett, brown canvas caddy bag; Findlay Douglas, a fine copper cup. This was presented by P. R. Jennings, of Bruce & Cook. P. H. Seward and C. S. Prizer each received a half dozen golf balls. The scores for the day follow:

36 Hole Medal Play Handicap.

	a.m.	p.m.	Gross	Hd'cap.	Net.
W. H. Thayer	104	97	201	10	191
George E. Downe	112	116	228	36	192
Harry Martin	111	121	232	20	212
M. E. Danforth	103	98	201	10	191
Frank Barrett	91	92	183	6	177
C. M. Fink	101	109	210	14	196
E. C. Molby	102	101	203	16	187
C. N. Brazie	99	105	204	18	186
C. H. Roberts	101	108	209	20	189
G. A. Suter	146	139	285	60	225
B. S. Waite	116	115	231	32	199
J. J. Blackmore	117	127	244	32	212
P. R. Jennings	90	94	184	8	176
J. B. Garfield	89	84	173		173
F. Douglas	84	90	174	+8	182
F. C. Jennings	89	90	179	6	173
H. S. Hadden	97	103	200	12	188
A. S. Armagnac	114	117	231	20	211
W. G. Le Compte	129	122	251	60	191
P. H. Seward	123	106	229	46	183
Chas. S. Prizer	99	101	200	16	184
E. E. Gano	101	101	202	16	186
R. B. Hunt	129	123	252	60	192

Steam and Mill Supplies

The American Bolt and Screw Case Company, of Dayton, Ohio, reports by its president, G. W. Chaffin, that its business is on the increase.

The Crescent Steel and Wire Company, of Camden, N. J., has been incorporated, with a capital of $125,000. The incorporators are: Charles Hyde, I. E. Higgins and Louis Caplan.

The American Tool Works, of Portland, Ore., has been incorporated, with a capital of $60,000, to manufacture machinery and tools. The incorporators are J. L. Hartman, Dave Hirstel and Daniel R. Murphy.

The International Nut Company, Niagara Falls, N. Y., has been incorporated, with a capital of $225,000. The incorporators are: Roscoe A. Ellis, Edward D. Cleghorn and Warren Chambers, all of Niagara Falls.

The Isthmian Canal Commission, at Washington, D. C., will receive bids until October 26, 1908, for furnishing the following supplies: Piston pump, plate-straightening machine, generators and engines, electrical supplies, pig iron, babbitt metal, naval brass, sheet copper, brass and copper tubing, chain, wire cable, wire, leather belting, flexible-rubber sleeves, wheel-

barrows, anvils, hammers, saws, ratchet drills, track chisels, blow torches, wrench parts, stocks and dies, taps, water gauges, gauge cocks, grease cups, hose clamps, measuring cups, ball bearings, screws, etc., etc.

Grenesto Engineering Company, of New York City, has been incorporated, with a capital of $5,000, to deal in machinery. The incorporators are: George F. Parmelee and Stuart M. Beard, Bronxville, N. Y., and Oscar P. Ostergren, 553 Tenth street, Brooklyn.

Ramsey Manufacturing Company, of Camden, N. J., has been incorporated, with a capital of $600,000. The incorporators are: Charles Wesley Outen, Isaac M. Shelley and Robert C. Latimer. The company will manufacture machinery and tools for the making of fans and receptacles.

The Safety Power Transmission Company, Brooklyn, N. Y., has been incorporated, with a capital of $50,000. The directors of the company are: F. J. Schussel, Oyster Bay, L. I.; Henry F. M. Podeyn, 300 Sherman street, Brooklyn; Nelson L. Jacobus, 112 North Maple avenue, East Orange, N. J.

The Lumley Purchasing and Supply Company, of New York City, has been incorporated, with a capital of $10,000. The directors are: Thomas J. McPherson, 1174 Jackson avenue; Charles Cole, 123 West Eighty-third street, New York; Arthur M. Brothers, Mineola, L. I. The company will deal in railway supplies.

The Executive Committee of the Southern Supply and Machinery Dealers' Association recently held a meeting at Louisville, Ky., the following gentlemen being in attendance: J. C. Miller, president; J. A. Riechman, chairman of the committee; Alvin M. Smith, secretary-treasurer; Mallory Beddingfield, E. F. Hartfelder and H. C. Clark, members of the executive committee; W. H. Banks, chairman of the manufacturers' and conference committee. At this meeting suitable resolutions were passed on the demise of Chas. H. Briggs, of the Briggs-Weaver Machinery Company, of Dallas, Tex., who served as president of this association last year. **Resolutions were also passed re-indorsing the resale plan** as adopted by many manufacturers, and the manufacturers were requested to assist the membership of the association as much as possible in maintaining these prices. The members were also requested to take up with their various trade bodies the question of advance in railroad rates, provided they were interested; a resolution was also offered requesting the postmaster general to withdraw his proposals to the public school principals throughout the country to instruct the pupils in the "Beauties of the Parcel Post System," as the executive committee deemed this a local question with which the federal government should not interfere. The members of the association were also requested to give preference in their purchases to members of the American Supply and Machinery Manufacturers' Association, and the manufacturers were requested to recognize the fact that their goods should be marketed only through the legitimate dealers, and that they should discontinue the practice of selling their lines through brokers and manufacturers' agents who call on the consuming trade. It was the general opinion of those in attendance at the meeting that trade conditions are much better, and all confidently look for a much better business as soon as the election is over and the December stock taking is finished.

Metal Market

Chicago Iron Market, October 15.

Southern, No. 2 Foundry	$16.85-17.35
Lake Superior Charcoal	19.50-20.00
Lake Superior Coke Iron, No. 2 Foundry	16.50-17.00

"Daughter of the President." This is an interesting snapshot of Miss Halsey, the charming and vivacious daughter of W. H. Halsey, president of the National Association of Master Plumbers. The picture was taken by our Mr. Winslow at Nantasket Beach during the recent convention in Boston.

New York, N. Y.—October promises to be remembered as a month in which the market drifted after having shown through successive months measurable gains in buying power, says "The Iron Age." Some signs are recognized of preparations by the railroads to take care in the near future of imperative needs, particularly in equipment. Steel manufacturers have found proof that the demand of the country calls for an increase in commonly accepted estimates. The South Chicago and Ensley mills have been best employed, the former having now a record of about 50 per cent operation for the year. Steel bar specifications have been a conspicuously good feature in finished material, but in the sheet and tinplate trades operations are much restricted. The export trade continues satisfactory. All pig iron markets are conspicuously dull. The Sault mill is starting, and its coke requirements for the year are put at 150,000 to 200,000 tons. The Lake Superior ore movement for the year is now estimated at 22,000,000 to 23,000,000 tons.

Boston, Mass.—The president of one of the largest copper producing concerns in the Rocky Mountain dis-

trict states that he has a list of domestic specifications for 50,000,000 pounds of electrolytic and casting copper, which will be placed within a week after the election, no matter what the result. "So far as I am concerned," said this copper producer, who is a director in enterprises that employ 450,000 men, "I am buying goods as they are wanted in the concerns that I am operating, but I know there are tens of thousands of men who buy goods in a small way who are deterred from placing orders by the election. A few days after the elections are over I expect to see orders for copper pick up on us with a rush that will jack up that metal a cent a pound. Trade is reviving in Europe and the foreign demand for copper is increasing."

New York Metal Market, October 13.

Copper, Prime Lake	$13.50-13.62½
Copper, Lake, Arsenical brands	13.50-13.62½
Copper, Electrolytic	13.45-13.55
Antimony, Cookson's	8.12½
Lead	4.40
Spelter	4.77½
Straits Tin	29.12½

October 15, 1908:

Foundry iron was the same price as week previous
$6 less per ton than the year previous
Copper was ⅛c less a lb. than the month previous
¼c less a lb. than the year previous

Personal

Roderick McIver, of the Lamont & McIver Plumbing Company, 1909 Curtis street, Denver, Colo., is confined to his home with a serious attack of illness. His many friends hope for a speedy recovery.

J. W. Zeringer, formerly manager of the Boston office of the Wells & Newton Company, after having been engaged in looking after that company's interests in New York for several years, has returned to his old post in Boston.

J. W. Drew, familiarly known to the eastern plumbing trade, has associated himself with the John Douglas Company, of Cincinnati, O., to cover the Hudson River section of New York state and Connecticut. His many friends wish him success in his new venture.

Eugene McCarthy, exalted member of the plumbing firm of Donovan & McCarthy, Syracuse, N. Y., is receiving hearty congratulations from a host of friends upon the anticipated announcement of his coming nuptials, which event is liable to take place almost any day. Foreign papers, please copy!

W. F. Gooley, F. O. James and Wm. B. Goldie, prominent members of the plumbing fraternity at Syracuse, N. Y., have lately returned from lands unknown, where they have been enjoying their annual hunting expedition. About every species of animal that trods the dense woods of the Adirondacks was ensnared by these gamesters. Enough said!

The Pacific Gas Mantle Company, of San Francisco, has purchased the business of the Reliable Self-Lighting Gas Mantle Company in that city.

Association News

Boston, Mass.—A big effort is being made to secure a full attendance at the fall meeting of the Massachusetts State Association of Master Plumbers, which is to be held on Wednesday, October 21, at 12 o'clock, in Corley's Hall, Springfield. The Springfield Association will be the hosts of the occasion and will serve dinner at 1 o'clock. Several important trade matters will come before the convention for discussion.

Washington State Association of Master Plumbers Meets at Spokane.

Spokane, Wash.—The thirteenth annual convention of the Washington State Association of Master Plumbers was held in the Pantages theater building in this city on Monday and Tuesday, October 5 and 6. The regular routine business was taken care of and several matters of importance to the plumbing trade were discussed.

The election of officers for the ensuing year resulted as follows: **President, William T. Eckers; vice-president, A. M. Goddard; secretary, Howard Sweeney; treasurer, E. V. Lambert.** The following were selected as delegates to the next national convention: W. F. Eckart, W. B. Coffee and James Smyth; as alternates the following were named: M. Isbister, C. W. Stoddard and R. M. Westover.

On Tuesday evening the delegates were entertained at a banquet given by the members of the Spokane association in the Hall of the Doges at Davenport's, where an elaborate menu was served. Plates were set for 110 and all were taken. M. Isbister was an ideal toastmaster and he introduced the speakers of the evening in a most felicitous and happy manner. The speakers were: Mayor C. Herbert Moore, James Smyth, F. H. Mason, Charles Sweeney, E. Hughes and C. W. Stoddard, and Mrs. G. W. Manning sang several solos during the banquet. The banquet committee, which deserves honorable mention for the perfect arrangement, consisted of M. Isbister, chairman; James Smyth and A. T. Cattle.

On Wednesday, the day after the convention, the visiting delegates and the members of the Spokane association with their ladies made a trip to Coeur d'Alene, Idaho, and up the St. Joe river. The party of about ninety persons left the Spokane terminal for the lake city at 7:30 o'clock in the morning. Upon their arrival there they boarded the steamer Flyer, which had been chartered for the occasion, and were taken up the river. Meals were served on board the boat. An orchestra accompanied the party and dancing was enjoyed on the return voyage.

CONVENTION DATES.

October 21, 1908.—Fall meeting of the **Massachusetts State Association of Master Plumbers** at Springfield, Mass.

October 28, 1908.—Annual meeting of the **Central Supply Association** at the Auditorium hotel in Chicago.

January 19-21, 1909.—Fifteenth annual meeting of the **American Society of Heating and Ventilating Engineers,** in New York City.

Obituary

William Lumb, the World's Oldest Master Plumber, Passes On.

William Lumb, the oldest master plumber in the world, passed on at his home at 11 Sparhawk street in the Brighton section of Boston last Friday, October 9, after an illness of considerable duration. He had for a long time been practically helpless, being able to get about only with the aid of a wheel chair. His demise was pronounced to be due to a general breakdown.

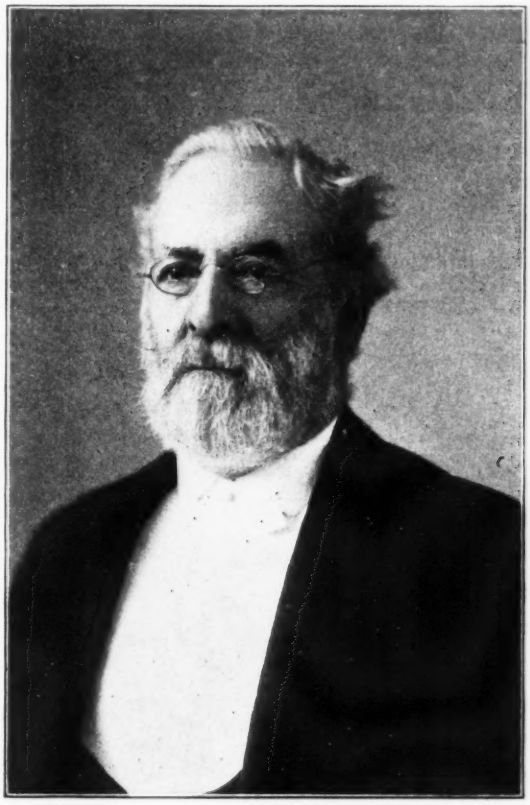
Mr. Lumb was born in Huddersfield, England, May 24, 1819, on the same day and hour as Queen Victoria, a fact of which he had always been proud and which had always caused him to have a strong feeling toward the late queen. He attended the public schools at Huddersfield and at the age of 15 years was apprenticed to a plumber. He left England for America in 1839, sailing on the Roscius for New York and landing after 46 days on the water. He worked at his trade in New York and Philadelphia and came to Boston in 1848.

His first place of business in Boston was on Sudbury street, where he continued to follow the trade for a time. Later he entered the firm of Lockwood, Zane & Lumb. They moved to School street, where for years they carried on the business. Later Mr. Lumb went to Province court and Province street, where the business was conducted under the firm name of William Lumb & Company. He retired from active business in 1898, after more more half a century as a master plumber and sixty-three years at his trade, but although he had not been actively engaged at his trade for the past ten years, Mr. Lumb had never lost interest in the affairs of his fellow craftsmen, and he was a frequent attendant at meetings and conventions of the Master Plumbers' Association and other similar organizations. At the recent annual convention of the National Association of Master Plumbers, which was held in Boston in July, Mr. Lumb was one of the central figures and on the opening day was escorted to the platform and spoke to the delegates. He was almost helpless at the time, being taken to the hall in a carriage and to the platform in his chair. He insisted, however, on standing upon his feet while speaking to his brethren, and two of the members of the association held him upright while he made his few remarks.

He was a member of a number of benevolent and social organizations, in all of which he was a prominent worker and a popular member. He was one of the oldest members of the Ancient and Honorable Artillery Company of Boston, of DeMolay Commandery, Knights Templars and Revere Lodge of Masons. He was also a member of the Scots Charitable Society and other British-American organizations.

Mr. Lumb was twice married. His first wife, Sarah Oliver, of New York City, passed on in 1861. In January, 1887, he was married to Mrs. Eliza Coverly, who survives him.

Funeral services were held on Monday afternoon, October 12, at 2 o'clock, at the late residence at 11 Sparhawk street, the Rev. William A. Knight, pastor of the Brighton Congregational church, officiating. The music was furnished by the Masonic quartet of De Molay Commandery. The list of honorary pallbearers was made up of his close friends and members of the different organizations with which the deceased was affiliated. They included Nixon Moore, of the Knights Templars; John McGaw, of the Scots Charitable Society; Thomas Wilson, of the Victorian Club; Thomas Loudon, a grand nephew; John Crawford and Daniel Finnerty, of the Boston Association of Master



THE LATE WILLIAM LUMB OF BOSTON.

Plumbers, and representatives of the Ancient and Honorable Artillery Association and of the Masons. Following the ceremony the body was taken to Mount Auburn cemetery, Cambridge, for cremation. Floral offerings were sent by the Ancients, the Master Plumbers' Association, the Knights Templars, the old employes of William Lumb & Company, and others.

Among the master plumbers of Boston and vicinity, in addition to the two who acted as pall bearers, who were present were: President Andrew J. Curtin, of Medford; David Craig, Edward C. Kelley, James O'Connell, James Tucker, Warren French, John Cosden, Cornelius Cronin, Daniel Shannon, David Smith, William P. Kane, Thomas J. Tute, Isaac Riley and Edward Moore.

Frank W. Mulligan, who conducted a plumbing business at 561 Congress street, Troy, N. Y., passed on at his home in that city on Thursday, October 8, in

his thirty-fifth year. Mr. Mulligan had many friends both in his city and its vicinity who were sorry to learn of his untimely demise. He also is survived by his parents, his wife and two children.

John Henry Mills, a pioneer heating engineer and inventor of heating boilers, of Boston, Mass., passed on at his home in Faneuil, a suburb of that city, on Tuesday, October 6, in his seventy-fifth year. A throat disease from which he had suffered for the past two years caused his demise. He was an authority on heating and no library on this subject is considered complete if it does not contain his work, "Heat—Its Application to the Warming and Ventilation of Buildings."

The following tribute to his memory is written by one who had unusual opportunities to know him:

IN MEMORIAM.

To the older generation of persons engaged in the heating business, and perhaps to some of the younger members of the profession, **the late John Henry Mills** was well known as an authority on heating and ventilation, a skilful mechanical engineer, an inventor and

THE LATE JOHN HENRY MILLS OF BOSTON.

maker of cast-iron boilers, some of which at the present time are made and sold under his own name. Mr. Mills was also an author and had written many books on heating. Among his best efforts in this direction was his well-known book on heat, in two volumes.

Mr. Mills devoted much time to the compilation of this work, and the amount of data collected, the valuable tables, the experimental work involved by the setting up of (actual test) apparatus, and observation has added to his fame in an indelible way, not soon to be forgotten.

I venture to say that hundreds of copies of these valuable works occupy a place in the offices and libraries of the heating engineer of today, and are often consulted.

The writer first became acquainted with Mr Mills in the year 1877, being introduced to him by the late C. C. Walworth, of the Walworth Manufacturing Company, of Boston.

Mr. Mills had then just invented and was introducing in the United States his one-pipe or overhead system of heating (so-called then). He was also introducing with great energy and enthusiasm the use of the Mills cast-iron boilers. At that time there was intense opposition and prejudice to the use of cast-iron boilers for heating purposes, and all manner of criticisms and objections were heaped upon them. Mr. Mills never flinched, but forged ahead, making patterns and getting his castings made as best he could in foundries not so well equipped in those days as now for the making of large boiler castings. He experimented, tested and tried his boilers to the point, until in a test one was exploded and Mr. Mills very nearly lost his life, and bore to his dying hour the marks and scars of the accident.

But, nothing daunted, Mr. Mills still believed in the efficacy of cast iron for boiler constructions and never yielded his opinion, and he was largely instrumental in bringing to the front the use of modern cast-iron boilers for both power and general heating purposes, and he made many valuable improvements in them. He also devoted considerable thought and study to the best means of mechanical ventilation, and constructed many special ventilating fans for that purpose. In a general way he endeavored to benefit the art of heating and get the best out of it, and he generally succeeded.

Mr. Mills was in 1877 engaged by the firm of Wisdom & Fish, of St. John, N. B., to act for them as consulting engineer, taking up his residence in St. John for a considerable time, introducing his one-pipe system of heating, and Mills' cast-iron sectional boilers in that city.

I have good reason to think that the association of Mr. Mills with our firm at St. John in 1877 first developed his taste and ideas along the line of heating by hot water circulation, for it was while employed in St. John that he first came in contact with the modern hot-water heating apparatus, as employed there, and had an opportunity to see, study and compare results of the water apparatus versus steam.

After leaving New Brunswick he resided in Buffalo, being connected with the firm of Hart, Ball & Hart, of Buffalo, and later (I think) with the E. H. Cook Company of Rochester, N. Y., both large and influential heating concerns in their day, and introduced the hot water heating system in Western New York. Later he took up his residence in Boston, Mass., and did more or less engineering work, usually of a difficult and problematical character.

No problem pertaining to heating apparatus seemed so difficult that he would not endeavor to solve it or work it out. Many engaged in the heating business

have been benefited by his timely and friendly advice, and I feel sure he will be much missed by the heating fraternity of which he was always a valuable and popular member.

Mr. Mills had an extensive acquaintance with the leading architects and heating profession generally. He was a man of integrity, very energetic, social and kind in nature, with firm opinions and progressive ideas, of resourceful mind and great inventive genius.

He had designed many large systems of warming and helped many a young heating engineer and others in the profession to unravel knotty problems, and his services and engineering ability were largely in demand.

Among some of the large buildings he planned for hot water heating and superintended in their construction was the Hampden County Jail, Springfield; Trinity Church, Boston; Peirce Building, Copley Square, Boston; Tremont Temple, Boston, and many others too numerous to mention.

Under a bright blue sky and in the light of God's warm sunshine on October the eighth, 1908, I saw laid "at rest" at Mount Auburn, the mortal remains of our much lamented friend and companion. May he rest in peace! **John Albert Fish.**

R. H. Freshwater, who has conducted a plumbing specialty business at Steubenville, Ohio, for the past twelve years, passed on at his home in that city on Thursday, October 9, in his sixtieth year. He was for eighteen years a preacher in the Methodist Episcopal Church in Ohio previous to his connection with the plumbing trade. His wife and two daughters survive him.

William Ricketts, one of the pioneer plumbers of Cincinnati, Ohio, passed on at his home in that city on Wednesday, October 7, and was buried on Friday of last week at Spring Grove Cemetery, the Masons having charge of the funeral. The Cincinnati Master Plumbers attended in a body. Mr. Ricketts was one of the oldest master plumbers in Cincinnati, being close around the 75 year mark. He has conducted a shop at 213 East Fourth street for the past 30 years. His specialty has been work of a high-class order, and some of the finest work turned out in that part of the country has been done by him. He was never married. He was a great scholar, being thoroughly conversant with the French, German, Spanish and Latin tongues. He also was a musician of some note.

Plumbing Inspection

Omaha, Neb.—Harry W. McVea, plumbing inspector of this city and member of the board of directors of the American Society of Inspectors of Plumbing and Sanitary Engineers, did some good missionary work at the recent annual meeting of the League of the American Municipalities; not only did he have a letter read before the convention impressing the delegates with the importance of having their respective cities represented either by their plumbing inspector or some officer of the health department at the next annual meeting of the American Society of Inspectors of Plumbing and Sanitary Engineers, which is to be held here in February, 1909, but he also did an enormous amount of "rooting" for the meeting in a more personal way whenever he had occasion to do so among the delegates from all parts of the country.

Troy, N. Y.—Dr. C. E. Nichols, health officer of this city, has started a crusade on all out-door closet vaults, and he has succeeded in having over five hundred vaults obliterated this year. The doctor says he intends to keep the good work up until every closet vault in the city is wiped out. This will keep the plumbers busy installing water closets, as there are yet nearly a thousand vaults to be replaced.

Typical plumbing establishment in a small New York town where a general line of work is necessarily done. The picture shows W. H. Lenz's new establishment in St. Johnsville, N. Y. Mr. Lenz and some of his assistants are seen in front of the store.

The Middle States

Angola, Ind.—E. F. Myers has secured the contract to install steam heating plant in Chas. Orton's residence in this city and in the Christian church at Kendallville.

Cincinnati, Ohio.—Martin Daly, of this city, has been awarded the contract for the plumbing in the new United States Playing Card building at Norwood, Ohio. The consideration is $19,000.

Burlington, Iowa.—The Russell Sewerage Disposal Company, of this city, has just finished the installation of one of its sewage disposal systems without a sewer in C. A. Tubs' up-to-date residence at Alexis, Ill.

Pekin, Ill.—H. J. Beebe, formerly connected with the plumbing business of Carl Lucas, but who engaged in

business on his own account last spring, reports that his venture has proved very successful so far and that the prospects are very bright.

Massilon, O.—The contract for the plumbing system that will be installed in the fine new hospital that is being built here at an expenditure of $100,000 has been awarded to the L. H. Nielson Company, of Pittsburg, Pa. Nearly one hundred fixtures will be required.

Zanesville, O.—The Roekel Plumbing and Electrical Company, of this city, has been incorporated under the laws of this state with an authorized capital stock issue of $10,000, and will conduct a general plumbing and electrical contracting business. The incorporators are Henry Roekel, James V. Clark, Charles A. Rosa, Leland R. Adams and George Schusler, all of this city.

Pennsylvania

Norristown, Pa.—William Comfort has opened a plumbing establishment at 112 Swede street.

Denver, Pa.—E. T. Line will install a hot water heating system in Martin Althouse's residence.

Connellsville, Pa.—F. T. Evans, of this city, has been awarded the contract for installing the steam heating system that is specified for the fine new banking and office building that is being built in this city for the Second National Bank.

Pittsburg, Pa.—The McGinness-Smith Company, of 217 First avenue, has been awarded the contract for installing the steam heating system in the new fire engine house at Brookline, this city. The contract price for the work is slightly in excess of $1,500.

Brownsville, Pa.—The contract for the entire steam heating system for the new public school building that is being built here has been awarded to the McGinness-Smith Company, 217 First avenue, Pittsburg. The contract, including the boilers and radiation, amounts to over $5,000.

Pittsburg, Pa.—The contract for remodeling the entire steam heating system in the Pittsburg City Hall has been awarded to the Bartley-Kennedy Company, Penn avenue and Third street. As all of the old radiation will be torn out and be replaced by new and modern radiation, it is a contract of considerable importance.

Pittsburg, Pa.—The Weldon & Kelly Company, of 305 Wood street, has received the contract for the entire plumbing system that is specified for the large new business block and warehouse building that is being erected at Liberty avenue and Fourteenth street for James W. Houston. There will be a large number of fine fixtures required in this building, which will be seven stories in height, and which will cost in the neighborhood of $50,000.

Clearfield, Pa.—The new plumbing establishment of Kittleberger Bros., at 319 Market street, has been completed, and the concern has moved to the new location, which is about double the size of the old one. A fine show room, which will be equipped with all styles and designs of plumbing supplies and accessories, is being installed, and will be one of the most complete show rooms in Clearfield county. The offices and salesroom are also on the first floor, while the stockroom is located on the second floor. The shop and workroom is located in the spacious basement.

Pittsburg, Pa.—The Oakland Plumbing Company, of this city, has been incorporated under the laws of this state to take over the business formerly conducted in Oakland under the same style. The capital stock is $5,000, and a general business will be conducted, although the business of the old concern will be changed and enlarged considerably. It will for the present, however, be carried on at the old location. The incorporators are Mary McDonald, William T. McDonald, John J. Kerrigan and L. A. Kerrigan, all of this city.

New Jersey

East Orange, N. J.—B. F. Stosse will remodel the plumbing and heating in James Vandervall's building here.

East Orange, N. J.—A. G. Trapper, of Main street, will do the plumbing in three two-family houses on Halstead street for Olsen & Lenart.

East Orange, N. J.—The John Curtin Plumbing and Heating Company has been incorporated, with a capital of $50,000. The incorporators are Harry H. Picking, David A. McBride and Leslie Gray.

Southern Notes

Florence, Ala.—Geo. Russell, of this city, has been awarded the contract for the installation of a heating plant in the R. M. Patton school. The consideration is $1,425.

Wheeling, W. Va.—The Robert W. Kyle Company, of this city, has received the award of the contract for the plumbing system that will be installed in the new building that is being erected for the St. John's Orphans' Home. The building will cost about $50,000, and the contract for the steam heating has been awarded to the same concern.

Wheeling, W. Va.—The contracts for the installation of plumbing and heating systems in the fine new $100,000 building for the Young Men's Christian Association have been awarded to William Hares' Sons, of this city. The building will be five stories in height, and the contracts are among the best that have been handed down here for a long time. The structure will be heated by steam, and the plumbing system will include shower baths, a swimming pool, bath rooms, lavatories, water closets and urinals.

TOO LATE TO CLASSIFY.

Wanted—Traveling salesman experienced in the plumbers' woodwork line, who is well acquainted with the jobbing trade; one who, if necessary, will travel all over the United States. Must be a man of ability and good habits. State salary expected, experience, past and present positions and amount of trade controlled. No applications considered unless full information and references are given. All correspondence strictly confidential. Address No. 964, "Domestic Engineering," Chicago.

Contemplated Work

Washington, D. C.—Sealed proposals will be received at the office of the supervising architect until 3 o'clock p. m., November 19, 1908, for the construction (complete) of the United States postoffice at Rawlins, Wyo., in accordance with the drawings and specification.

Washington, D. C.—Sealed proposals will be received in the office of the supervising architect until 3 o'clock p. m., November 24, 1908, for the construction (complete) of the United States postoffice at Baker City, Oregon, in accordance with the drawings and specifications.

Washington, D. C.—Sealed proposals will be received at the office of the supervising architect until 3 o'clock p. m., November 16, for the construction (including plumbing, gas piping, heating apparatus, electric conduits and wiring) of the United States postoffice at Iola, Kansas, in accordance with the drawings and specification.

Washington, D. C.—Sealed proposals will be received at the office of the supervising architect until 3 o'clock p. m., November 17, 1908, for the construction (including plumbing, gas piping, heating apparatus, electric conduits and wiring) of the United States postoffice at Crookston, Minn., in strict accordance with the drawings and specifications.

Washington, D. C.—Sealed proposals will be received at the office of the supervising architect until 3 o'clock p. m. on November 7, 1908, and then opened, for the construction (including plumbing, gas piping, heating apparatus, electric conduits and wiring) of the United States postoffice at Eugene, Oregon, in accordance with drawings and specifications.

Trade Literature

From Walworth Manufacturing Company, 128-136 Federal street, Boston, Mass: "Prices at a Glance," an exceedingly handy folder, containing price list of cast malleable and brass fittings, brass and iron valves and cocks, wrought steel and iron pipe; 6 pages, 3½x6 inches.

From the Electric Heat Regulator Company, of Minneapolis, Minn.: "Uniform Temperature," a handsome booklet illustrating and describing the Minneapolis heat regulator for hot air furnaces, steam boilers, water heaters, valves on street, steam and natural gas, with an interesting chapter on what the regulator will do. An invaluable addition to the trade library of steam fitters and heating engineers.

From the Red Jacket Manufacturing Company, Davenport, Iowa: 'Red Jacket Pumps," illustrated catalogue and price list of pumps, cylinders and supplies; 208 pages, 6x9 inches, in black paper cover, with neatly embossed title. This is an exceedingly well gotten up and complete pump catalogue, its illustrations being carefully made half-tone engravings and its descriptions and general information written in a clear and concise style. It contains besides a complete catalogue of the company's products, including Red Jacket iron pumps, cylinders and gray iron castings, an unusually large amount of valuable information, not the least important being a large number of useful tables. The value of the catalogue is greatly enhanced by its excellent index, making it a useful reference book in the pump and well-boring line. Last but not least attention deserves the chapter on "Selling Points and Suggestions," containing much information which has probably never before appeared in any pump catalogue. Taking it all in all, it is a most valuable book for dealers in pumps, cylinders and supplies, and the Red Jacket Manufacturing Company, of Davenport, Iowa, is prepared to mail it promptly upon request mentioning "Domestic Engineering."

Fully Competent.

Counsel: "Do you understand the nature of an oath?"

Witness: "Sir?"

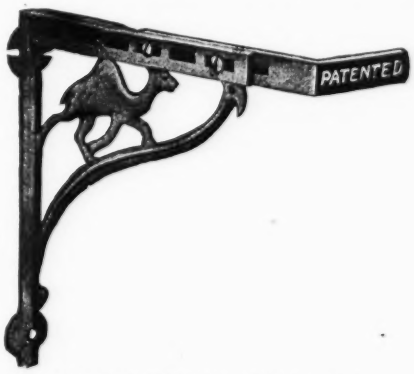
Counsel: "Do you understand the nature of an oath, I say?"

Witness (impressively): "Sir, I have driven a keb in the city for nigh on forty years."—London Pick-Me-Up.

With the Makers

The Campbell Extension Sink Bracket.

Campbell Manufacturing Company, of Gadsden, Ala., manufactures high-grade, re-inforced soil pipe and fittings, the Campbell continuous clean-out fittings and plumbing specialties; among this later class probably none deserves more attention on the part of the up-to date master plumber than the Campbell extension sink bracket, herewith illustrated. This bracket fits any sink and does away with drilling of sink rims,



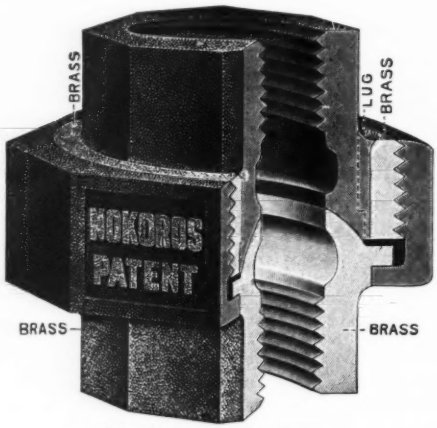
The Campbell extension sink bracket.

breaking the enamel, exposing the heads of bolts in the rim to rust, and it makes an instantaneous hit with every sink user. It extends under the rim of the sink around its front, holding it firmly in place as if in a frame. The bracket is interchangeable and can be used singly where only one bracket is used. Its great adaptability has caused it to be known as the "Intelligent" bracket and its many friends maintain that it deserves this surname. Master plumbers who have not yet become acquainted with this excellent fitting will receive an interesting introduction upon request to the manufacturers mentioning "Domestic Engineering."

The Nokoros Pipe Union.

An absolutely non-corrosive pipe union representing the highest type of development along this particular line is what the manufacturers believe they have achieved in the "Nokoros" pipe union, shown in the accompanying illustration. For many purposes a union that has to be packed is not desirable, especially when a joint has to be taken apart and made over, and for the same reason a union with a non-corrosive joint, i. e., rust-proof in all its bearings, is all the more desired.

The Nokoros union is made of the very best quality of refined air furnace malleable iron and the best grade



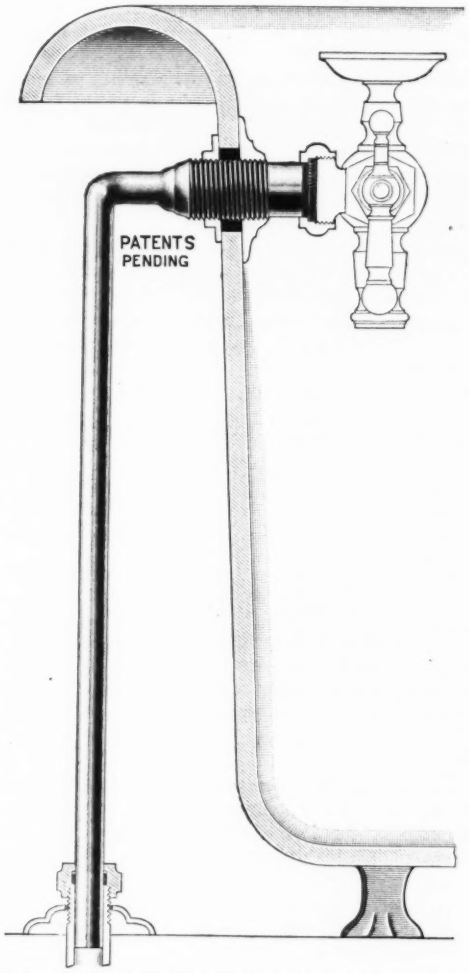
The Nokoros pipe union.

of steam metal, and a reference to the illustration will show that it has a non-corrosive brass to iron thread connection, brass to iron faces, and a non-corrosive brass to iron seat between ring and tail piece; the manufacturers claim that it is the only union made absolutely non-corrosive at all contact points. The union is of octagon shape, so that a monkey wrench will turn it with ease; it also is air tested and guaranteed tight, and suitable for hard work and hard usage. It is made by the Illinois Malleable Iron Company, of 517-539 Diversey boulevard, Chicago, who will gladly send full particulars about this and its many other high grade products upon application mentioning "Domestic Engineering."

A New Invention from the House of Glauber.

The Glauber Brass Manufacturing Company, of Cleveland, Ohio, has just placed on the market a bath cock shank and supply pipe combined, for any make of double Fuller bath cock, as shown in the accompanying illustration. The manufacturers are of the opinion that it is the highest development in the art of making connections on bath tubs, being simple, practical and effective, and they think that among its many good features the following are the most noteworthy:

No separate joints between the faucet body and the service pipe; no troublesome tapered seats in the shanks; no gaskets to connect shank and supply pipe; no coupling nuts at said point; no shanks to split; no opportunity of leakage on the "outside" of the tub, because faucets can only be attached and detached "within" the tub. It requires less room than any other supply pipe made, because it can be set in position and connected at the service pipe end before the tub is placed into position. This enables a plumber to install the pipes smack close up to a wall and then shove the tub up to it. It can be used with faucet bodies of other makes, if necessary. Has all the advantages of Glauber patent annealed supply pipes as to adjustability, etc.



Glauber bath cock shank and supply pipe combined.

In installing the pipe before the tub is set, it is attached to the service pipe with the trimmings on the upper end of the shank removed. Then the tub is backed up to its proper position and the trimmings (flange, bath cock nut and small shoulder or collar) are again attached and everything is ready for connection. If, however, there is sufficient room and the plumber wishes to place the tub first, then the nickel-plated flange, bath cock nut and the little collar are left on the upper end, and instead the trimmings that belong

Vacuum Heating

Vacuum Heating means 15 per cent or more heat from the same amount of coal—less care—no leaky valves—and the houseowner satisfied with an economical, satisfactory job.

Norwall Automatic Air and Vacuum Valve puts new life into old heating jobs.

Overhauling old heating jobs and equipping with Norwall Vacuum Valves means a saving in coal bills to the owner and money to the steamfitter. Write today for our booklet on the principles and purposes of "Norwall Vacuum Heating."

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RADIATORS & BOILERS

AMERICAN RADIATOR COMPANY

General Offices, 282-286 Michigan Ave., Chicago.

New York	Cincinnati	Cleveland	Atlanta	Brantford, Ont.	Denver
Philadelphia	Boston	Milwaukee	Minneapolis	Seattle	St. Louis
Pittsburg	Buffalo	Indianapolis	Kansas City	Omaha	San Francisco

on the outside of the tub are removed, until the pipe has been inserted through the holes in the tub; then they are replaced and connection is ready to be made. Additional information about this invention will be found on page xxv of this issue and the manufacturers will be glad to supply interested parties with full particulars upon request, if it is mentioned that "Domestic Engineering" gave them the tip.

The Whitney Basin Cock.

The Simplex Faucet Company, of Hyde Park, Mass., has just brought out an entirely new basin cock under the name of the "Whitney," embodying all the features of the Simplex faucet, made by that company, besides being a vacuum valve and acting as such in all cases. It differs from the ordinary compression cock by working with the pressure of the water instead of against it, thereby eliminating the principal cause of wear, namely, the collection of grit on the packing and seat. This collection of grit is true on all faucets working against the pressure, as they face the water as it comes from the pipe, while in the Whitney the packing faces the other way and such grit that does get in passes by and settles below the face of the seat. The possibility of grit getting into the faucet is reduced to a minimum, as the water has to pass through a perforated cap before entering the faucet itself, therefor there is no chance to abuse the packing or seat by the screwing process, as the valve closes automatically with the pressure of the water as soon as released by the handle, which holds the valve open against the pressure. They save water, as there is not the leakage which is usual and the flow of water can be readily gauged from a drop to a full stream. The handle is made in such a manner that it can be located in a position to suit the purchaser. These faucets are absolutely guaranteed, as are the other products of the company. A good idea of their neat appearance can be gained by a glance at the accompanying illustration, and interested parties can obtain full particulars promptly upon request mentioning "Domestic Engineering."

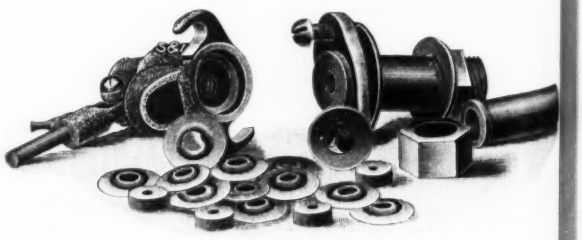
The Whitney Basin Cock.

The S. & I. Ball Cock.

The S. & I. Company, of 63-65 Governor street, Springfield, Mass., have recently placed on the market a new ball cock, in which it is said that several new and distinctive features have been incorporated. This ball cock is made for top, bottom and end supply, and adapted to all conditions. Sheet metal removable seats, made of special hard rolled alloy of sheet bronze,

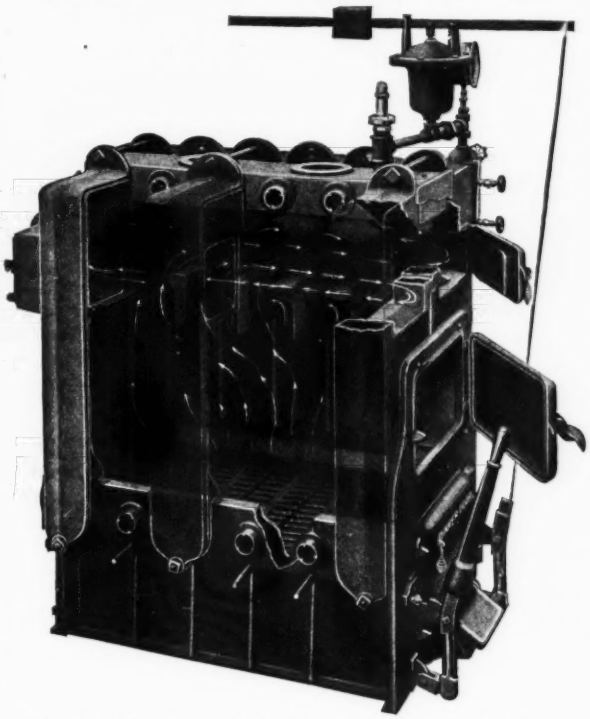
S. & I. top supply ball cock.

are used in their construction. The inlet and outlet sections are connected by a simple S. & I. bayonet connection. The plumbing is connected to the inlet section, and the outlet section contains a seat packing and plunger, which can be connected to and disconnected from the inlet section by just a half turn of two screws. No wrenches are needed to connect or disconnect this ball cock, a screw driver being the only tool required. Among other valuable features claimed for this device are the adoption of standard iron pipe threads and standard packings throughout; a special construction preventing singing, whistling and water hammer; an easy short action operating lever, which checks all water waste; the lever being connected close to the plunger is very powerful and a positive shut-off under all conditions; a new seat and packing can be installed in five minutes, making it a new ball cock. An elevated pattern of the S. & I. ball cock made for low down tanks is self-contained and elevated to the top of the tank, making it easy of access for repairs.


Parts and sheet metal seats and packings of the S. & I. bottom supply ball cock.

Before placing these ball cocks on the market the manufacturers tested them in actual use for over a year under varying conditions and they stood every test. Red metal and the best workmanship are used throughout, making them strictly high-grade goods. A neat 20-page booklet giving full particulars has just been issued and will be mailed promptly upon request mentioning "Domestic Engineering."

Improved Capitol Boilers



CAPACITIES: Steam 450 to 1,225 sq. ft. Water 750 to 2,025 sq. ft. Direct Radiation

The Improved Capitol retains the practical merits which have made Capitol Boilers standard in heating efficiency and fuel economy, viz:

Space saving Countersunk Header.

Divided Sections—providing for expansion and contraction, and quick repairs.

Slip nipple construction (no long screws or lock nuts).

And Following New Features:

Height of Improved Capitol—water line 43½ inches (steam); 47½ inches flow openings (water).

Unequaled amount of prime heating surface.

Free waterways — insuring rapid circulation.

Very large fire chamber and deep fire-pot (heavy fire, slow combustion).
Improved grate construction.
Ample ash-pit.
Reduced number of parts—light weight units (economical installation).

We are confident that Improved Capitol Boilers will quickly become popular with the trade and architect, as well as with the general public, by reason of specific and strong practical advantages.

Send for illustrated descriptive detailed literature.

United States Heater Company.

General Offices and Works: Fort St., and Campbell Ave., DETROIT, MICH.

Branches:

DETROIT,	139 Jefferson Avenue
NEW YORK,	129 Worth Street
CHICAGO,	34 Dearborn Street
KANSAS CITY, MO.,	120 W. 11th Street
OMAHA, NEB.,	916 Farnam Street

Sales Agents:

ST. LOUIS, MO.,	L. M. Rumsey Manufacturing Co.
DENVER, COLO.,	Kellogg & Stokes Stove Co.
MINNEAPOLIS, MINN.,	Plumbing & S. F. Supplies Co.
NORFOLK and RICHMOND, VA.,	Virginia-Carolina Supply Co.

Patents

900,076. Beer-Dispensing Apparatus. Sylvester J. Asbell, Paterson, N. J.

900,117. Moulding-Machine. John F. Nolan, Chicago, Ill.

900,140. Drive Head or Cap for Well Pipes or Casings. David B. Whitehill, North Clarendon, Pa.

900,152. Faucet. Louis S. De Forest, New Haven, Conn.

900,159. Drain-Valve for Steam-Heating Radiators. Lewis E. Fuller, Chicago, Ill., assignor of one-half to Arthur M. Heath, Chicago, Ill.

900,176. Flushing Device for Water-Closets. Louis D Lawnin, Edwardsville, Ill., assignor of one-half to N. O. Nelson Manufacturing Company, St. Louis, Mo., a corporation of Missouri.

900,180. Pressure-Filter. Peter E. Maggini, Los Angeles, Cal.

900,191. Pipe-Wrench. Henry E. McDonald, Petone, Wellington, New Zealand.

900,197. Blow-Off Cock. Gustave H. Osman, Topeka, Kans.

900,260. Automatic Quick-Closing Valve. Albert H. Boyd, Leadville, Colo.

900,286. Water-Purifying Apparatus. Cass L. Kennicott, Chicago Heights, Ill., assignor to Kennicott Water Softener Company, Chicago, Ill., a corporation of Illinois.

900,233. Vacuum-Generating Apparatus for Steam-Heating Systems. Wallace E. Tillinghast, Worcester, Mass.

900,355. Humidifier. Frank B. Comins, Sharon, Mass.

900,514. Post-Hinge for Water-Closet Seats, Covers and the Like. George A. Geary, New York, N. Y., assignor to William S. Emery, New York, N. Y.

Kelly Closets.

Thos. Kelly & Brothers, of Chicago, the original inventors and manufacturers of the tight or pressure tank and who first made it popular, have had many imitators during the past twenty years—so many, in fact, that the hired pirates, that attempt to imitate anything novel as soon as it appears in print, have lost upwards of one million dollars for the firms that employed them. Several patterns of Kelly closets have a record of twenty years' rough usage at the cost of only $1.50 for repairs. The firm through its skill and ingenuity has made all pirates and freebooters in this line look like novices or amateurs. Send for catalogue of the genuine Kelly closets. Thos. Kelly & Brothers, Congress street and Forty-sixth avenue, Chicago.—Adv.

BUYERS' READY REFERENCE

Brass Castings.

We are equipped to do your casting in brass, bronze or special metals. Get our prices. McCambridge & Company, Philadelphia, Pa.

Water Closets.

THE R. C. McCLURE CO., SYRACUSE, N. Y. Mfrs. of the very highest grade of Water Closets. Send for booklet.

K. V. A. CLOSET TANKS AND Seats. None better made. Knott-Van Arnam Mfg. Co., Fort Wayne, Ind.

Expansion Bolts.

STAR EXPANSION BOLT CO., 147 Cedar St., New York City. Expansion Bolts in Brass, Iron & Lead. 100 different styles. Any size (½"-2"). Star Drill Holders and Special Drills. Write for catalog—fully descriptive.

Pipe, Cast Iron.

CHAS. MILLAR & SON CO., UTICA, N. Y. Superior quality Cast Iron Gas and Water Pipe, Cast Iron Soil Pipe and Fittings, Cast Iron Screwed Fittings.

Couplings.

SELL YOUR SURPLUS COUPLINGS and fittings. We buy. Write us. A. & J. Mfg. Co., 26 W. Randolph St., Chicago.

Gas Fixtures.

E. BAGGOT CO., 45-47 EAST LAKE St., Chicago, Ill. Makers of Gas Fixtures and Fittings.

Lighting Fixtures.—Gas only, and Combination Gas and Electric. Send for Catalogue showing complete line at prices you have never before seen quoted. Large stock, ready for immediate shipment. American Brass & Glass Co., 19 La Salle St., Chicago.

Plumbers' Specialties

PLUMBERS' RUBBER, BRASS AND leather specialties. We are headquarters for pipe hangers; special prices on application. Plumbers' Specialty Mfg. Co., 119 N. 11th St., St. Louis, Mo.

Traps, Steam.

THE ALBANY STEAM TRAP CO., Albany, N. Y. Improved Return Steam Traps. Practicability and efficiency.

Badger's Copper Hot Water Boilers

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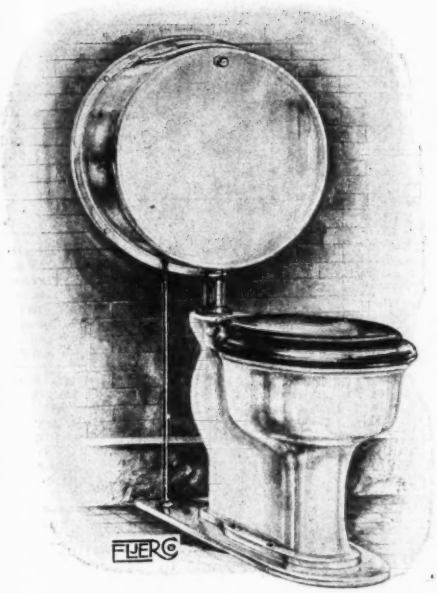

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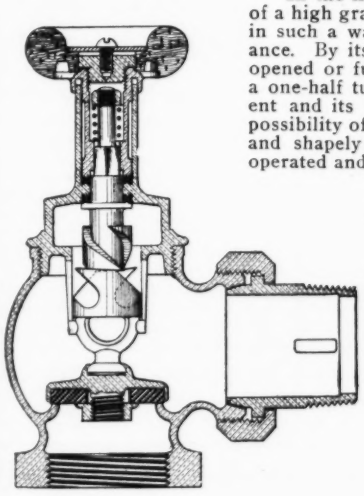

In the Lavigne Packless Value the essential features of a high grade radiator valve are very happily combined in such a way as to give a compact and graceful appearance. By its quick-opening arrangement it can be fully opened or fully closed and locked closed by less than a one-half turn; its packless feature is simple and efficient and its self-locking feature absolutely prevents the possibility of the seat being jarred loose. It is handsome and shapely in design, has normal dimensions, is easily operated and is fool-proof.

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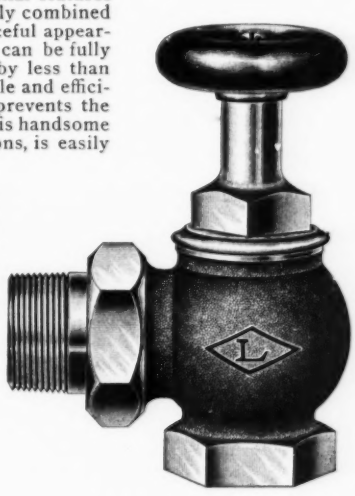

Lavigne Mfg. Company, (Valve Dept.) **Detroit, Mich.**

Domestic Engineering

Published each Saturday by "Domestic Engineering" (Incorporated). Office of publication, 49-53 North Jefferson street, Chicago. Telephone, Main 3254.

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Copy and cuts for advertisements should be received by the last day of the week preceding publication. We cannot guarantee insertion or changes in advertisements if received later.

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October 17, 1908

CLASSIFIED ADVERTISEMENTS

The rate of advertising under this heading is 10 cents a line an insertion. The average advertisement runs five words to a line. To insure insertion in this column copy should be received not later than Wednesday afternoon.

Help Wanted.

SALESMAN WANTED—ONE FOR St. Louis, one for Chicago; complete plumbing supply line. Address No. 954, "Domestic Engineering," Chicago.

WANTED—FIRST CLASS SALESmen in every locality calling on the plumbing trade to sell an A-1 plumber's tool. Answer, giving territory covered, to Aztec Mfg. Co., 205 Tehama St., San Francisco, Cal.

WANTED—A MAN WHO UNDERstands covering pipes; must be a resident of Chicago; one with business getting ability who wants to go into business. Address No. 952, "Domestic Engineering," Chicago.

WANTED — VALVES SALESMAN for Chicago district, one who has had experience and can produce results, to represent one of the best known manufacturers in the country. Address, giving full particulars, No. 959, "Domestic Engineering," Chicago, Ill.

WANTED — TRAVELING SALESman, acquainted with plumbing and steam fitting supplies, also some knowledge of mill supplies, to cover State of Wisconsin. Give reference, stating age and experience. Address No. 960, "Domestic Engineering," Chicago, Ill.

HIGH-GRADE MAN WANTED TO take an interest in and manage a good, clean heating and power contracting business, established 15 years, in Chicago; must be the right kind of man with $2,500 cash for purchase of good working interest, money all to stay in the business; salary according to ability. Answer only if you mean business and can fill the requirements. No. 956, "Domestic Engineering," Chicago.

WANTED—HIGH GRADE MEN IN every large city in the U. S.; large acquaintance with architects and consulting engineers essential. We give exclusive territory to competent men who can write contracts for our Automatic Steam Vacuum pump (maintains high vacuum on any Steam Heating system with only one ounce of pressure; or as long as there is any fire in the furnace). Automatic Vacuum Pump Company, 121 N. 8th St., St. Louis, Mo.

Situations Wanted.

SITUATION WANTED—PLUMBER and fitter; young man; five years' experience; will go anywhere. Address No. 957, "Domestic Engineering," Chicago.

MANAGER OR SUPERINTENDENT, experienced in steam or plumbing brass work is open for engagement. Expert in cost account work and as a "leak stopper." Can produce results and save money. Address No. 962, "Domestic Engineering," Chicago.

SALESMAN—EXPERIENCED IN both plumbing and steam lines, with thorough acquaintance among Eastern, Southern and Middle West jobbing trade, wants a change. Might entertain taking good lines on commission in New York and vicinity. Address No. 963, "Domestic Engineering," Chicago.

Agencies Wanted.

EXPERIENCED AND RESPONSIble salesman desires to represent in Chicago manufacturers of plumbers' or steam specialties salable to jobbers, the trade or to consumers; nothing trifling considered; highest references. Address No. 944, "Domestic Engineering," Chicago.

For Sale.

FOR SALE.—ONE FOUR HUNDRED horse power Warren Webster feed water heater, safety valve grease controller, complete; used six months; reasonable. Address M. J. Hawkins, Albany, N. Y.

FOR SALE—TREASURY STOCK in an incorporated plumbing and heating business; stock has made over 50% this year and will bear investigating. Address No. 561, "Domestic Engineering," Chicago.

FOR SALE—IN A GOOD GROWing town in the State of New Jersey, a plumbing, heating and hardware business. A splendid opportunity for a good live man; terms can be arranged satisfactory. Address No. 958, "Domestic Engineering," Chicago.

PLUMBING BUSINESS FOR SALE—In 18,000 Michigan town, old and well established plumbing, heating and electric wiring business; best of reasons for selling. Will require about $5,000.00 capital; a business proposition if you mean business. Address No. 936, "Domestic Engineering," Chicago.

FOR SALE—PLUMBING AND heating business, good trade, well established. Going abroad account ill health. Address Geo. Ingham, Bronxville, Westchester County, N. Y.

Plumbing Schools.

EARN $5 A DAY—LEARN TO BE a plumber in from 4 to 6 months on easy payments. For particulars address Master Plumbers' Trade School, 3402 Lindell Ave., St. Louis, Mo.

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Swimming Pools.—Their construction, cold and hot water supply; various methods of heating water; directions as to selecting correct sizes of heaters. A complete guide, containing the latest information on the subject. By Jno. K. Allen, Associate Member of American Society of Heating and Ventilating Engineers, Editor of "Domestic Engineering." Over 30 illustrations. Bound in cloth. Price, 50 cents, postage paid. "Domestic Engineering," Chicago.

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Sold by Jobbers

A SUCCESSFUL MASTER PLUMBER AND HEATING CONTRACTOR, AND HIS LARGE FAMILY OF BOYS.

This interesting photograph shows George McGhan and his eight sons, all connected with the successful plumbing and heating firm of Geo. McGhan & Sons, of Valdosta, Georgia. Reading from left to right, they are: Geo. McGhan, Sr.; George, Jr.; Louis, Addison, Frank, Harry, Joseph, Paul and David. Geo. McGhan began his career in the heating business in Washington, D. C., some twenty-five years ago as a steamfitter's helper. A year later he went to Atlanta, Ga., where he obtained employment with the plumbing and heating firm of Hunnicutt & Bellingrath, remaining with it twelve years. From there he went to Savannah, Ga., from which city he came to Valdosta, Ga., and engaged in business on his own account about ten years ago, his "total assets being," to quote his own words, "an indebtedness of $45 and a large family of boys." He has, however, succeeded in building up a business that runs from $30,000 to $50,000 a year, and he attributes his success to the fact that he installs modern plumbing and heating systems correctly and with the very best materials he can obtain. Geo. McGhan is ably assisted in the management of his business by his brother, Frank P. McGhan, who also has had twenty-five years' practical experience in the plumbing and heating trades; his two oldest sons, George and Louis, who have had seven and six years' experience, respectively, in the business, and who both hold certificates of examination from the New York City Master Plumbers' Association. Illustration reproduced by courtesy of "The Valve World."

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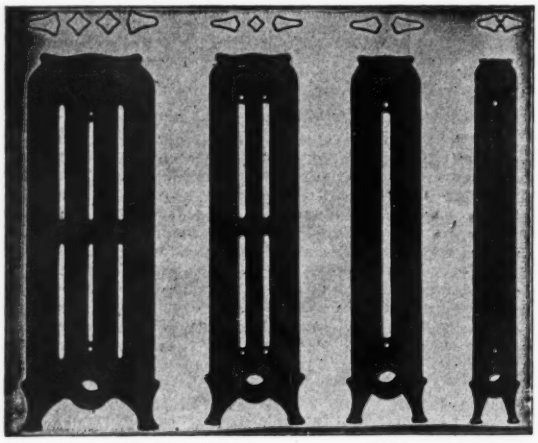

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THE ADVERTISEMENTS IN DOMESTIC ENGINEERING ARE INDEXED. TURN TO PAGE XXVI.

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